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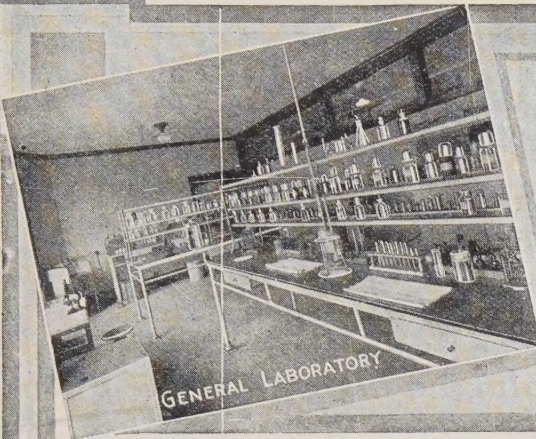
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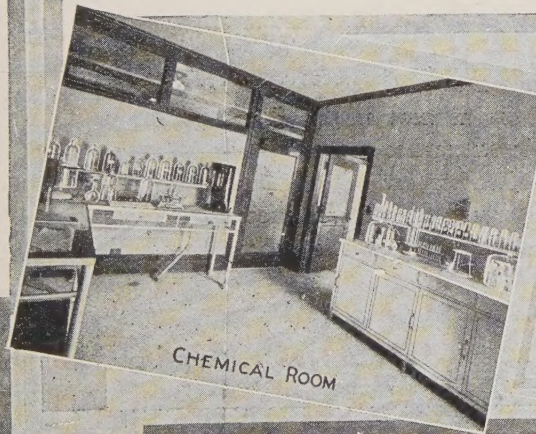
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Contents



Original Articles

The Correct Development of the Growing feet to insure Health.—S. C. Woldenberg.....	41
Other Things Army Does Besides Fight.—Hon. John W. Weeks.....	45
The Stability of Mercurochrome Solutions.—D. Loeser, E. R. Hamburger, and A. L. Konwiser	61

Editorials

Le Phare de France.....	67
Passports	72
Dr. John Hunter.....	73

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Book Reviews

Diabetic Manual.—E. P. Joslin.....	74
Vaccine Therapy.—G. H. Sherman.....	74
Operative Surgery.—W. S. Bickham.....	74
Text Book of Pathology.—W. G. MacCallum.....	75
Physical Diagnosis.—W. D. Rose.....	75
Medical Clinics of North America.—Volume VIII No. 3.....	75
Local Anesthesia.—J. J. Posner.....	76
Concealed Tuberculosis.—G. D. Head.....	76
Manual of Obstetrics.—J. C. Hirst.....	75
Operative Surgery.—W. S. Bickham.....	76
Personal Hygiene for Nurses.—J. W. M. Bunker and C. E. Turner.....	77
Guy Patin and the Medical Profession.—Francis R. Packard.....	77
NEWS ITEMS	78

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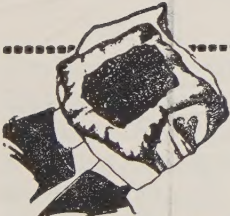
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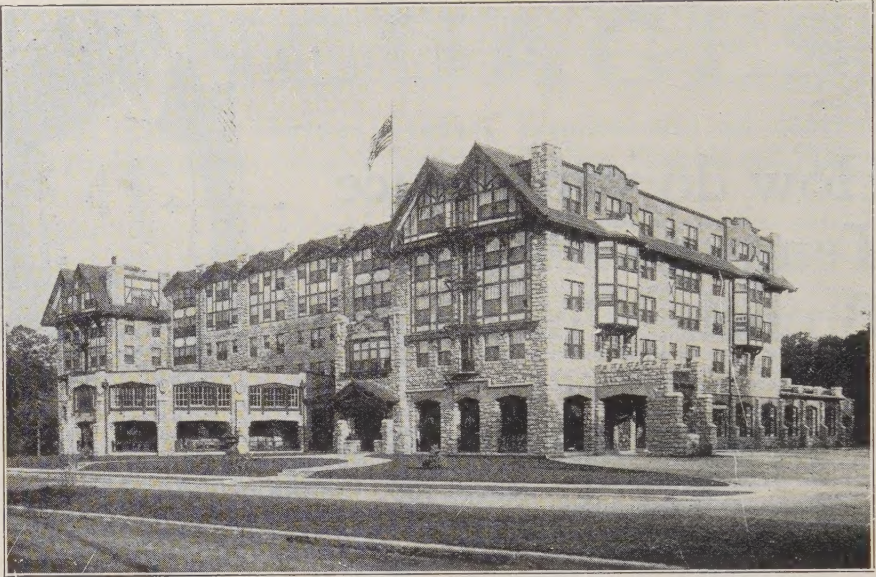
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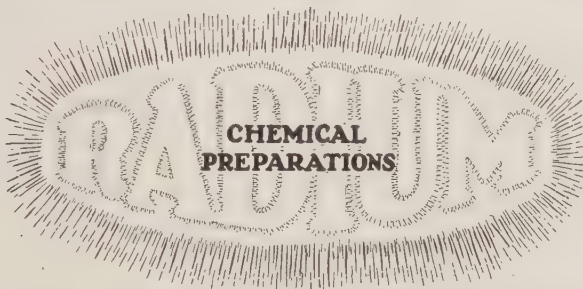
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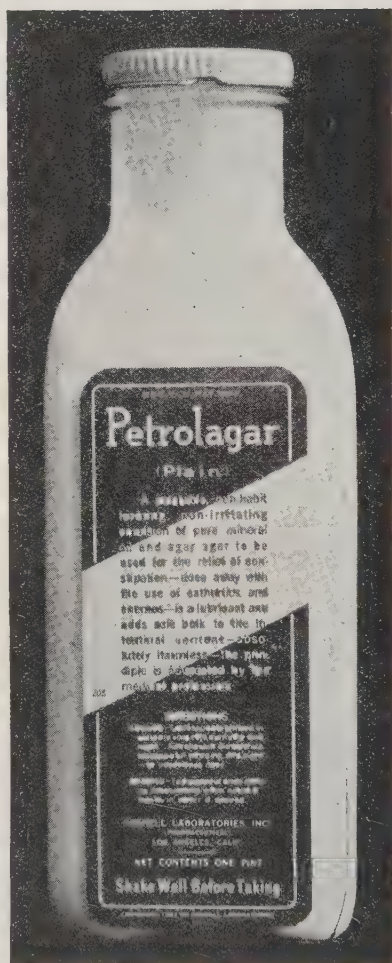
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The
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Vol. XLVII

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Original Articles

THE CORRECT DEVELOPMENT OF THE GROWING FEET TO
INSURE HEALTH

BY S. C. WOLDENBERG, B. SC., M. D., M. SC.

The feet are the most faithful servants of our body, and as a rule are treated the worst of all. They have to carry us through life, in millions of steps, years of standing, and with little appreciation of these duties, we squeeze them into more or less irrational shoes, and conduct them into an improper position. The wonderful machine of the foot is one-half unused, and the one-half that is used is employed in an inappropriate manner. The human foot is an active organ of locomotion, and not a passive support, on which to stand and walk.

The foot is a propelling machine. Therefore, the evil effect of faulty footwear can best be understood by a comparison of the shoe-bound foot of today, with the ideal, represented by the famous foot, in the "Hermes of Praxiteles." In this, the inner edge is straight, the outer edge is slightly curved, the little toe is neither crumpled nor twisted, and lies parallel to its fellows.

Compression of the foot in front is the most common deformity—curling downward and inward of the little toe from side pressure made by a too narrow shoe. The deformities which are the result of crowding the foot into the shoe, have been universally represented in art since the sixth century B. C., as seen in the Gladiator, and other famous statues. Investigations of larger collections of shoes, such as the one at the Chicago "World's Fair," or the one at the Musee-Cluny in Paris, demonstrate the fact that deformities of the feet were as common during the dark ages as they are today, and since deformities of the feet occur very early, during adolescence, it is exceedingly difficult to find a normal foot among civilized people. If found it will usually be discovered that the possessor has not worn shoes during this period.

A good example of the effects of pressure in producing deformities of the feet, is seen in the ingenious devices for bandaging and deforming the feet of Chinese women. Flat-footedness and faulty weight-bearing is a national problem, and was a prevalent cause for unfitness in the Army. This is a very important problem in civil life.

One factory of ready-made arch supports, claims to sell three thousand pairs each month, to shoe stores. This shows the demand by the public. A geographical study of the distribution of the defects of feet, found by Examining Boards under the draft, revealed the fact that abnormal feet were comparatively rare in the Southern States, due the practice of the rural part of this population in going barefoot.

In little babies, one frequently sees an apparent flat foot, when the foot is placed upon the ground, but in reality this is due to a pad of fat fitting in the arch, and is not a true flat foot. Where the true deformity is noticed, proper shoes, made on anatomical lines, will usually give very satisfactory results, without the use of arch supports. This fact is very well demonstrated in the Army and Navy, where no arch supports are used. The American Public Schools show that approximately over seventy per cent of the students have faulty weight-bearing lines, resulting in foot trouble; this is a very important question in relation to the efficiency of the race. It has been proven, when walking in high heels, that there is comparative inaction of the muscles of the legs and feet. This results in less nutrition and less perfect circulation through the legs and feet. High heels upset the architectural balance of the feet and legs, and the effects of the incorrect attitude are felt in the spine and pelvis; they induce and aggravate lordosis (or hollow back) and eventually cause flattening of the anterior arch.

Colonel Munson, M. C., U. S. Army, states: "The marching powers of the 'foot troops' are a most important factor in the conduction and success of battles and campaigns, and the army which marches best, other things being equal, is the successful army. Mobility is the key of military success, and troops which cannot march, will not be given, by a more vigorous enemy, opportunity to fight, except under what may prove to be decisive military disadvantage. The effect of badly fitting shoes, upon the psychology of the war, is very great. Even where the soldier is able to continue the march, the discomfort produced at every step soon reduces buoyancy of spirit, causes mental irritability, and materially diminishes fighting capacity."

This applies even to a greater extent in carrying out our duties in everyday life. Fortunately the deforming of the feet, from shoes producing such conditions as bunions, varicose veins, over-riding toes, hammer toes, corns, callousities, ingrowing toe-nails, etc. (if in a mild degree), can be rectified by the wearing of anatomical shoes.

The pigeon-toe walk, which is very commonly seen in children, is generally a sign of weak feet, and upon examination the bulging of the

inner side of ankles and the flattening of the arches, show very plainly that it is the foot, and not the attitude, that requires treatment. In fact, this attitude is nature's method of really safeguarding against increasing deformity, which will correct itself when its cause is removed. This can be done by fitting proper corrective shoes, built along scientific lines. Shoes for an adult should be at least one-half an inch or more longer than the distance from the heel to the tip of the great toe. The shoe should be straight from the tip to the ball of the great toe and it is most important that the distance from the ball of the great toe to the heel, should correspond, in the shoe, to that in the foot. Most shoes are made of the same thickness over the ball of the great toe and little toe, which is not correct. Corns are the result of wearing improper shoes, and if the basic foundation or shape is correct, there is no reason for their existence. By wearing a properly shaped shoe, it makes little difference, other than seasonal, whether a high or low shoe is worn, except that the tendons are less hampered above the ankle in a low shoe, and there is free play, commensurate with shoe support. Button shoes are not desirable, where real support is sought.

The detriment of a faulty shoe to efficient functioning of the body has been stressed. The foot-sore man, woman or child cannot, or is disinclined, to walk or exercise. Health-giving exercises promote circulation, respiration, digestion and elimination. Without it poor circulation, indigestion, nervousness, atony, lethargy, flabbiness, auto-intoxication, abesity and a train of other symptoms result, which the physician should do well to treat with shoes, and not with pepsin or digitalis.

The publications of the Life Extension Institute have emphasized the importance of this remedial measure, and it has been even suggested that legislation, both national and state, be enacted, to make it a punishable offense for a shoe manufacturer to turn out a shoe not built on anatomical lines—one that will be responsible for deformity or disability to the ignorant or unsuspecting purchaser.

There is no relation between the height of the arch and strength of the foot. The much abused high heel shoe is not always entirely to blame for foot troubles, although they are often monstrosities, anatomically and functionally ridiculous. With the pointed shoe it is even at times difficult to tell the right from the left, but under the salesmanship idea that they are "smart," "chic" and fashionable, or perhaps in this age of better hygiene, "in stock," they are readily sold. The more intelligent woman will not have such a deforming shoe "put over" on her. The term, breaking in a shoe, is often used in connection with a new purchase, when in reality in the majority of cases it is the foot that is being broken down. There is no valid reason why a new shoe should cause any discomfort, and they will not, if built on proper scientific lines and properly fitted. Shoes made along the lines of the Munson last are most excellent, and will meet the requirements of approximately eighty-five per cent of the race. All shoes

should be constructed on that idea, as the value of this has been proven during the world war. Properly shaped shoes are most desirable to avoid foot trouble, and it is not necessary nor desirable in the majority of cases to use arch supports. The use of arch supports in most cases is harmful and much better results are obtained by proper correction, and by the use of correct fitting shoes, along with graduated exercises.

The object of the shoe is to cover and to protect the foot. Therefore, the one should correspond with the shape of the other, but the shoemaker's foot, to which most lasts conform, is much narrower than the actual foot. Rubber heels should not be worn by young and vigorous individuals. Elasticity in gait is assured by the action of the calf muscles, not by a yielding substance beneath the heels.

By providing proper shoes for children, deformities will be prevented, as by inspection of the children's feet, it is shown that atrophy and compression begin at a very early age, and if protection could be assured during the period of rapid growth, serious distortion and diseases enumerated above will be prevented.

104 South Michigan Avenue, Chicago, Ill.

STRANGULATED HERNIA COMPLICATED BY PERFORATION OF AFFERENT LOOP

Delayed perforation of the intestine after an operation for strangulated hernia is more frequent than is generally supposed, and death from this cause is usually explained as being due to leakage around an apastamosis or to infection at the time of operation. The symptoms of perforation may not appear for several hours or days after operation. The only way to avoid this unfortunate complication is always to examine thoroughly the distended afferent loop for a distance of one to two feet beyond the point of strangulation for raw spots, ulcerated areas and minute perforations.

Suspicious patches of gut, if small, should be covered with an omental flap; if large and of doubtful viability, the loop can be brought out of the wound and treated expectantly. If the intestine is gangrenous it should be resected. When symptoms of peritonitis suddenly develop after an operation for strangulated hernia a prompt exploratory laparotomy is indicated. The rent in the intestine must be found and closed, the wound drained, and the patient placed in the Fowler position and treated for peritonitis.—Leigh F. Watson, *Southern Medical Journal*, July, 1924, xvii, p. 531-532.

OTHER THINGS THE ARMY DOES BESIDES FIGHT*

By HON. JOHN W. WEEKS, Secretary of War

There are several important reasons for the Transport Grant making the voyage which brings us to Los Angeles. We have on board a thousand men and their officers bound for the Philippines, and about fifty passengers, Senators, and Congressmen and their families, who will visit either the Hawaiian Islands or Alaska. Any trip of this nature is ordinarily termed a "junket," but such characterization does not apply to this tour of inspection. The voyage itself is necessary on account of the large number of officers and enlisted men who are going to Hawaii and the Philippines for station and in order to provide our Pacific outposts with much needed supplies. The amount saved to the Government by sending these officers and their families, the enlisted men, and freight by transport instead of by rail and commercial liner more than pays the cost of the trip. An Army transport maintains no free list, and every Senator and Congressman is paying his way. We have had a most pleasant and enjoyable trip from New York to the Pacific Coast by way of Porto Rico and the Panama Canal, but the pleasure which has come to us is incident to a tour of inspection of the activities under the jurisdiction of the Secretary of War being made by members of the Senate and House Committees on Appropriations and Military Affairs. Members of the Committee on Territories are also making the trip in order to better acquaint themselves with the needs of our great Pacific possessions; but the primary and most important object of the trip is to give members of the Committees of the Senate and House who must pass on legislation affecting the Army and provide the appropriation necessary to its maintenance an opportunity to visualize the requirements of the War Department and to assist them in solving the problems relating to our National Defense which are presented for their consideration by the War Department.

CITIZENS KNOW LITTLE OF THE ARMY

Speaking for myself, since assuming the office of Secretary of War, the prosecution of my duties has convinced me that our people know very little of the peace-time activities of their Army, that the average citizen is too busy with his own affairs to take the time to find out for himself what the Army does in time of peace to justify its maintenance and the large appropriations necessary for its upkeep; and one of the reasons which led me to make this trip is the opportunity afforded me to give our citizens on the Pacific Coast a more intimate knowledge of the activities of the Army and to direct their attention to important policies of the War Department which should have their consideration.

*Address delivered at a banquet tendered by the Los Angeles Chamber of Commerce, at Los Angeles, Calif., May 21, 1923.

A PROFIT-SHARING ENTERPRISE

Tonight it is my purpose to discuss some of the peace-time accomplishments of the Army and to demonstrate, if possible, their relationship to keeping our nation prepared for any emergencies which may present themselves in the future. At this time when extremists of various shades of violence are advocating the relinquishment of our military programs, and calling attention to fancied dangers of militarism, or to imaginary extravagances in the upkeep of an Army, I consider it very important to show that the Army is a profit-sharing enterprise and that its actual upkeep represents an inconsiderable cost to the taxpayer. I believe that Los Angeles should be particularly susceptible to common sense economic arguments. A city which has had the marvelous expansion of this one must recognize that progress is inimical to inertia—that success comes only through aggressive endeavor—and that the fruits of success must be protected not only against external coercion but also against those who from within preach the doctrine of passive surrender.

ENGINEERS DEVELOP LOS ANGELES HARBOR

A little more than fifty years ago a project was adopted for a 10' channel at the mouth of the Los Angeles River, to enable barges to communicate with ships in the exposed roadstead that formed your only pretense of a harbor. Thirty years later your far-sighted citizens conceived the daring idea of creating for your city a real harbor. The idea was secretly looked upon with amusement in some quarters—it was novel, to say the least. Within twenty years that dream has been accomplished and the harbor of Los Angeles is a fact, with an operating waterfront many miles in length. A considerable part of the actual work of this project was performed by the Army engineers. It was they who gave our Government assurance that your project was sound. It is they who have continued the work of development. They have protected your harbor against silt by constructing the diversion channel which carries the flood waters of the Los Angeles River directly to the sea. They have enlarged and improved the neighboring port of San Diego until it also is now adequate for the deepest draft vessels afloat on the Pacific. In assisting you during peace they were preparing themselves for their work in war—for the supervision of the vast engineering project of the American Army in France.

LEWIS AND CLARKE EXPEDITION AN ARMY ENTERPRISE

When the American colonies on the Atlantic were declaring their Independence, the Spanish conquerors of Mexico were establishing upon this great Pacific Coast, the flag and authority of Spain. A quarter of a century later an Army expedition under Lewis and Clarke brought American civilization to the great Northwest. For the next half century the Army was the only public organization able to encourage and assist our pioneer ancestors in their development and westward expansion. The Army

conducted nearly all of the preliminary explorations. It constructed the roads and trails leading west. It built bridges and canals, to enable supply bases to keep abreast of the pioneers. It conducted the surveys and prepared the maps which are so necessary in the opening up of new lands. Army engineers initiated most of the accurate methods now employed by the geodetic, topographic, and hydrographic surveys of our possessions. As our citizens moved west they had not only moved over Army roads and trails with the aid of Army maps, but their goods and their lives were protected by the troops of the Army. Finally when the time came to link our western outposts with eastern civilization, the Army located, constructed and even operated the earlier railroads.

ARMY BUILDS COUNTRY'S RAILROADS

Our railroad development began with the construction and operation by Army engineers, of such well known roads as the B. & O.; the Northern Central; the Erie; the Boston and Providence; the New York, New Haven and Hartford; and the Boston and Albany. American Army officers became so widely recognized as railroad builders that when the Czar of Russia desired a road from St. Petersburg to Moscow, he selected an Army engineer for the task. This officers died before completing the task, but passed it on to another American officer to complete. This early preparation fitted our officers for a vast project which was soon to develop. The Gold Rush of '48 and '49 turned the eyes of America towards the Pacific. Immigrants surged westward and it became apparent that the economic growth of our country demanded the creation of a transcontinental system of railroads. This dream, like so many that have been fostered in the inspiring climate of the Great West, appeared visionary to many people. Yet the American Army undertook the task, projected the transcontinental lines, and thus led the way to the unification of the greatest civilization which the world has yet known. When you discount the value of our military forces, remember that in their side of the balance rests our railroad development in the past, as well as our air development and many other contributions in the present.

PROTECTED PIONEERS ON WEST COAST

In 1846, American troops took forcible possession of the military post of the Presidio of San Francisco, which had previously been taken by the Mexicans from Spain. At the time of the Gold Rush this outpost was held by a handful of American troops. As San Francisco grew overnight into a considerable city, the military importance of the west coast was greatly increased and the Presidio grew rapidly to become eventually one of our greatest Army Posts. With this growth there was a growth of the commerce of the early settlers. The Army protected their incoming trains, developed the railroads, and later, when the need for development of water-borne commerce became urgent, played a large part in the construction of

the Panama Canal, which is so important to the commerce of the Pacific Coast.

ARMY INFLUENCE IN PANAMA AND SOUTH AMERICA

Because of the sanitary conditions in Panama, our predecessors were unable to remain. Under military administration, not only have we remained, but we have accomplished our major purposes. American occupation continues to exert a powerful influence upon the nearby countries in Central and South America. They are stimulated to undertake many improvements for which the means are derived from the increased prosperity which the canal has brought. The tolls collected by our own government have steadily increased to over a million dollars each month. Seventy-five lines of shipping, serving the great trade areas of the world, ply through this great waterway. The equipment of the Panama Canal as a base for fueling, supply, and repair, is complete. It is incidentally a military asset of greatest importance. Its use increases our naval power at least 50 per cent although its total cost is no more than the cost of 10 modern battleships, which would be doomed to obsolescence in 20 years. All that we need is an increased support for its defensive project, to make this key-point not only a tremendous economic asset but a source of national strength.

ENGINEERS CONSTRUCT ERIE AND OTHER CANALS

The construction of the Panama Canal was merely one of a continuous series of projects conducted by the Army engineers for the development of our waterways. Beginning with the construction of the old Chesapeake and Ohio Canal and the Erie Canal, they have continued their activities upon practically every navigable waterway in our country, and their work has been of such uniform excellence that there is a general acceptance of the belief that our governmental engineering projects are unexcelled by any other country on earth. The Corps of Engineers of the Army have expended a total of over a billion dollars with a consistent record of integrity and economy. They have recently undertaken an important project of examination of port terminal facilities in our great harbors. Because of the antiquated terminal facilities in many ports, the economy of waterway transport is largely absorbed by transfer. Communities are receiving very valuable assistance through the reports of the engineers on their systems. It is interesting to observe that the Army engineers report the terminal facilities in the harbor of the Pacific Coast to be far more up to date than in any other section of the country.

CONDUCTED LAKE SURVEY, BUILT WASHINGTON MONUMENT,

LIBRARY OF CONGRESS AND LINCOLN MEMORIAL

I could discuss at much greater length the interesting work of Army Engineers. They originally were charged with the lighthouse service and constructed most of our lighthouses. They conducted the famous Lake Survey. They have played a large part in developing the public buildings

of our Capital City. When the American citizen visits Washington, the first sight to greet his eye is the Washington Monument, completed after great difficulties by Army Engineers. The engineers built the wings and the dome of the Capitol. They built the old Post Office Building, the new Municipal Building, the Government Printing Office, the War College, the Agricultural Building, and the beautiful Library of Congress. They supervised construction on the new Lincoln Memorial and practically all of the park system of Washington. They are even developing the playgrounds of the District of Columbia. All of this is a by-product of the preparation of these engineers for war.

CHEMICAL WARFARE SERVICE KILLS RODENTS AND INSECTS

There are, however, many other fields in which the Army has contributed. A former engineer officer is at present at the head of the Chemical Warfare Service of the Army. General Fries has acquired quite a reputation, not only for his recent success in making himself highly unpopular with some of our radicals, but also for his constructive efforts to apply his service to peace-time accomplishment. Last year several men were killed in San Francisco during their efforts to fumigate a ship with hydrocyanic gas. The Public Health Service was much concerned over this matter and appealed to the War Department for suggestions. The Chemical Warfare Service co-operated with them to develop a mixture of tear gas which is fully effective in destruction of rodents and insects, and yet which will drive away human beings through inducing intolerable tears, before its strength has exceeded one-seventh of that necessary to be injurious. This is a great development in the sanitation field and opens the way for many new discoveries.

GASES COMBAT EPIDEMICS AND AID POLICE

Few Americans realize that the deadly mustard gas, as well as some of the chlorine compounds developed by the Army, are being experimented with successfully in the prevention of influenza and other diseases of the respiratory tracts. This discovery grew through the knowledge that during the great influenza epidemics, the employees of some of the war gas factories were practically immune to the disease. Extensive arrangements are made in the laboratories of the Chemical Warfare Service to conduct research into the possibilities for constructive use of other gases and liquids developed for defense. Tear gases have become generally recognized as valuable in the actions of police against outlaws and in protection of banks and other buildings against burglars and safe robbers. Investigations of various war gases have led to valuable contributions to the American dye industry, as well as to chemical production generally.

DEVELOP GAS MASK FOR INDUSTRIAL USE

The latest development of the Chemical Warfare Service has been in the adaptation of the gas mask to civil pursuits. The protection of miners

has long been an industrial problem. The Army succeeded in producing the only substitute suitable for their protection against the deadly carbon-monoxide. Other materials have been developed for protection of firemen and chemical workers. The chief handicap in the use of these materials has been that the use of masks caused the workers too much discomfort and they preferred the dangers. It was impossible to speak through the masks and for those who must be inconstant communication, masks were plainly impracticable. The Army has finally developed a mask which avoids the difficulties. There is a phonographic mouthpiece which gives at least 80 per cent of the efficiency of the voice. The mask is very comfortable in use, and a special process has eliminated the blurring eye pieces. When designed as an "all-purpose" mask, the result is a complete protection against not only monoxide, but ammonia fumes as well, and this mask should be widely used by the members of fire departments.

FIGHTING BOLL WEEVIL AND OTHER CROP DESTROYERS

The Chemical Warfare Service has also accomplished results in co-operation with the Department of Agriculture, in pest elimination. In the Philippines, flame throwers have been used advantageously against the locusts which periodically ravage the islands. In this country progress has been made experimentally in the direction of a solution for the boll weevil, the corn borer, and the potato hopper troubles. These dangers seriously threaten our agricultural prosperity and are a real menace to the life of the nation. I feel confident that the co-operation between the War Department and the Department of Agriculture will in time produce results of far reaching importance. There has also been progress towards protection of timber against the destructive teredo, and in co-operation with the Navy Department in developing a non-fouling paint for ship bottoms.

AIR SERVICE PROTECTS FORESTS AND FRUIT TREES

In the pest destruction experiments, the Army Air Service has been called in to investigate means of spraying liquids over the growing crops. The Department of Agriculture are calling for more planes for this purpose than we can possibly provide. Our Air Service is fully occupied with the development of commercial aviation, the protection of forests, and preparation for defense, in addition to activity against pests. In 1922 we were unable to provide planes for forest protection in the State of California, and the California Forester expressed the opinion that this was the direct cause of an increase of 23 per cent in incendiary fires in that year. Air patrols are frequently able to discover new fires which escape the observation of ground observers, and have been the first to report a considerable percentage of destructive fires. The Air Service has also been called upon to experiment in the spraying of fruit trees from the air. There are now even efforts to develop a process of actual seeding from the air. I need not impress upon you the general importance of our Air Service as a defensive proposition. I do wish to impress upon Americans

the fact that in preparing for defense, the Air Service are also preparing the way for commercial air development. Although the nature of wartime flying is such that military aviators incur great risks in their training, they are doing everything possible to insure safety for those who fly for peacetime purposes. Our development in the air is progressing in a very gratifying manner, except for the production of reserve planes, training of reserve fliers, and the provision of airways for commercial development. I believe that we might feel that our Army is at present playing the important part in development of air commerce that it once played in the development of American railroads.

ARMY BLAZED TRAIL FOR MANY AMERICAN INDUSTRIES

When I speak, as I speak know, of the part our Army plays in promotion of American industries, some of my listeners hear me with quite a bit of skepticism. It is so easy to think of an army as an instrument intended only for waging war, instead of the influence that it really is in developing and intensifying the general standards of our national output. Do you realize that the Army initiated our steel industry, guided it through its early development, and in co-operation with the Navy, stimulated it in its expansion to the present magnitude? Do you know that the great work of the Interior Department is merely a development of early activities of the War Department? The Bureau of Public Roads grew from the work of the Corps of Engineers. The Signal Corps played a major part in development of our telegraph systems, and through their operation of coastwise communications made possible the growth of our Life Saving Service. The motor truck and tractor industries owe a great measure of their development to the standardization of military transportation and the development of the tank. In all of these ways the Army has proven itself a veritable vanguard of American civilization, just as Roman armies left behind many permanent monuments to that early Republic.

DEVELOPED STEEL INDUSTRY AND METALLURGY

I am often challenged in the statement that the Army developed the steel industry. It can be proven. The dominating influences in steel development have been the provision of markets, the adaptation of the use of steel, and the standardization of steel specifications. The Army was the original market for steel products, opened up an ever increasing field for its employment, and led the entire industry in specifications for design. High grade steel dates from the Civil War when the Army demanded superior gun metal. In 1880 the requirements for high carbon steel used in guns were fully 50 per cent more severe than the general industrial specifications. The Ordnance Department introduced alloy steels and prescribed the use of nickel steel at a time when there were practically no other uses for such grades in the entire country, and when only two or three commercial companies were capable of their manufacture. In 1875 there was established at the Watertown Arsenal the largest metal testing

machine in the world—one that even today ranks near the top. The work of Watertown Arsenal was pioneer work in this country and it still has a tremendous influence in stimulating similar investigation on the part of technical schools and colleges. It was until the creation of the Bureau of Standards, the recognized leader in the field of metallurgical research.

ORDNANCE DEPARTMENT PIONEER IN INTERCHANGEABLE PARTS IN
MACHINERY

General manufacturing processes also owe a great deal to the Ordnance Department. The science of this interchangeable manufacture, that has revolutionized industry, began in this country in 1798, with the filling of a contract for 10,000 muskets. In 1812, interchangeability had become a normal contract specification of the War Department. Out of this development naturally came some consideration for what is known as scientific shop management. The well-known authority, Dr. Taylor, makes frequent reference to the work of the Army in this field. He states that the card system of shop returns, which was a very important development, was first employed in the shops of the Frankford Arsenal. In this direction as in many other ways, one is brought to realize what we owe to the Army in the way of by-products which alone would be worth the expenditure which we have made for national defense.

ARMY AS PIONEERS AND COLONIZERS

I have mentioned our work in colonization at the Panama Canal. Colonization is one of the severest tests of the ideals of a nation. As our country grew older this burden was thrust upon it, through acquisition of Alaska, Hawaii, Cuba, Porto Rico, the Philippines and Guam, as well as the Panama Canal Zone. Our burdens have been successfully carried, and the major part of the task was that of the Army. When gold was discovered in Alaska, it was the Army that opened the harbors, and built the roads and trails leading to the mines. Americans settled this new country, and were protected from lawlessness and mob rule by the Army. The Army surveyed their lands and policed their frontiers. Their only link with civilization was the Alaska cable, constructed and operated by the Signal Corps, which also operates 600 miles of inland telegraph lines. Army engineers protected the railroads which are opening this new region to our commerce. Business to the extent of over 110 millions annually is transacted over the 57 cable and telegraph systems and 17 radio systems, all operated by the Signal Corps.

Just as in Alaska, the Army has a record of accomplishment in other possessions. Building up public utilities, eradicating terrible diseases, educating the children, attending even to spiritual needs, creating the institutions of self-government and protecting these from aggression—in all of these has the Army left its seal, which is the seal of Americanism, upon our possessions. In the Philippines, where tribes once fought continuously, we have built roads, railroads, schools and churches, and have done more in

twenty years than was done before in centuries, to make the Filipinos a unified people. To the Cuban we brought freedom and civilization. One of the greatest influences for good in Cuba today is the American Ambassador, an American Army officer who gained his experience in the Philippines.

MEDICAL CORPS STAMPS OUT TROPICAL DISEASES

In speaking of our tropical ventures, I cannot overlook the work of Army medical men. The countries to the south of us, as well as tropical countries throughout the world, were once ravaged by yellow fever and malignant malaria. The French enterprise at Panama was completely blocked because 75 per cent of the employees lost their lives from disease within a few months of their arrival. In 1901, a group of medical officers, headed by Dr. Walter Reed of the Army, determined definitely that yellow fever is transmitted by the mosquito. Within a few months of the discovery, Havana was cleared of the disease that had ravaged it for 150 years. One can now live in Panama with as much assurance of health as though one were living in Continental United States. When we took over the administration of Porto Rico, the entire population was enervated by the results of what was then called "tropical anemia." Army officers demonstrated that this disease is a hookworm infection and these people have been redeemed from a plague that would have forever hindered their development. They have also played a considerable part in the elimination of pellagra, and one of them made the first discovery of Malta Fever in this country.

ERADICATES TYPHOID. STATISTICS UNCOVER PHYSICAL DEFECTS OF CITIZENS

All of this work of the Medical Department had a bearing upon the health of America. It moreover was preparing our officers to administer our war armies without the great disease losses of former years. During the Civil War, smallpox claimed over 7,000 victims, during the World War only 14. In the Civil War malaria claimed 15,000—in the World War, 25. In the Spanish-American War, 20,000 men suffered from typhoid—in the World War we have 2,000 cases—a contrast between twenty per cent and one-twentieth of one per cent of the totals engaged in these wars. This marked progress leads us to wonder if there was anything else that our medical men could give to Americans who entered the arms. We find indeed that there was. We are shocked to discover that approximately half of our young men who were examined for service had physical disabilities of some sort. We should be pleased to realize that after a comparatively short time in service, under the supervision of our physical trainers and our medical men, the recruits were generally developed into fine specimens of American manhood. This is no exaggeration. Because of prevention measures taken against such diseases as typhoid, there is moreover no doubt that the prevalence of these diseases has been greatly decreased throughout our general population.

CAMPAIGN AGAINST SOCIAL DISEASES

Many citizens fear the effects upon their sons of the military camps, which they appear to believe have a dangerous moral influence. These parents should know that the war records proved a shocking prevalence of social diseases among our young men as they came from their homes. The influence of the military camp is a continual education against these evils. The young soldier is protected, by education, by disciplinary measures, or by prompt treatment of those who cannot escape the dangers. The American Army in France was able to establish such a low record of disease that our Allies were astonished. We are living in an age when serious minded citizens are devoting time to consideration of our physical problems. What will be the influence upon our future, of our physical evolution? For one who would like to analyze this question, there is no better source of information than in the writings of the Surgeon General of the Army, and particularly in the volume on "Military anthropology."

SIGNAL CORPS' REMARKABLE INVENTIONS

I have already mentioned the work of our Signal Corps. Although the primary function of that Corps is to adapt civilian developments to potential military use, its research experts are continually presenting to the public solutions of perplexing difficulties. Among these are the loop which supersedes the cumbersome outside antennae, and General Squier's remarkable application of radio principles to commercial telephone systems, which makes possible the utilization of existing wire lines for sending private messages and broadcasting. General Squier has just recently announced another new invention—this time of a new radio alphabet which will remove some of the difficulties now experienced in radio work, and which permits a rapidity of transmission of more than double that of the Morse Code. The Signal Corps is also largely responsible for the use of the vacuum tube in this country, and also for the development of the small radio set which is now in such general use by radio amateurs. The Army has today 72 radio stations in its general radio web and this is a reserve system that would enable our country to continue its general contacts even in the face of a complete breakdown of civilian lines. Moreover, the Signal Corps today operates about 400 telephone systems, and is a telephone organization second only to the Bell Telephone which is, of course, the largest system on the Western Continent.

I am sometimes asked, "Just what is the value to the country of these systems?" I then point out, as I have done already, that a large part of our civilization has evolved from the pioneer work which the Army originated. Just as the Army built up our railroads, so did they play a part in building up our telegraph systems. As late as 1877, there were more than 3,000 miles of telegraph service in the south, operated by the Signal Corps as a continuance of their work during the Civil War. We can be assured that when our expansion necessitates it the present systems of

communication employed by the Army will be drawn upon for the general use by the public.

ARMY ORGANIZED WEATHER BUREAU

Do you realize that the Army first organized the Weather Bureau and that during Army control this bureau gave out information that was of tremendous interest throughout the scientific world? Is it generally remembered that the Ordnance Department has played a chief part in stimulating the essential American Nitrate industry? The Engineers have led us in flood prevention and control. One of our greatest present problems, the utilization of our vast resources in waterpower and irrigation prospects, is being considered by the War Department, the Interior Department, and the Department of Agriculture, in co-operation. The Federal Power Commission, in the second year of its operation, had to consider projects of development greater than double the combined resources of France and Italy, and six times as great as the aggregate of our own Federal development in the preceding twenty years. The greater part of the examination and study have fallen to the War Department. The Chief Engineer and his assistant, and the Chief Counsel of the Commission, are officers of the Army.

REMOUNT SERVICE HELPS FARMER BREED GOOD HORSES

A most vital element in national defense, more important perhaps than during peace time industry, is the question of transportation. I have called your attention to the work of the Army in building railroads, canals, harbors, and improving waterways generally. The Public Roads Bureau has been given at cost over a quarter billion dollars worth of material for public road construction. Trucks and tractors and many other manufactured elements are standardized throughout Army organizations, and this process of standardization has been recognized of great value to the industries. One concern reports a 20 per cent gain in sales through adoption of certain features recommended by army equipment experts. The Ordnance Department has periodic conferences with manufacturers relative to such matters. Finally, there is one phase of transportation problems that is even more directly an interest of the Army. The World War proved to be a great drain upon our stock of horses and mules and the standards have become rather depleted. The Army Remount Service has been given leadership in the effort to elevate the standard. With the close co-operation of the Department of Agriculture and civilian horse associations they have established a record of successful breeding that compares favorably with the best European records, and that assures us a timely solution for this vital problem.

RESCUE WORK IN CIVIL DISASTERS AND EMERGENCIES

We could not afford to maintain a great pioneer organization to perform such functions as I have described alone. Such benefits can come only

from some organized and trained public body which produces them as by-products and still performs its primary tasks. The Army is being trained primarily for emergency use. It is not limited to the emergency of war. When the Mississippi overflows its banks, it is the Army that is called upon for protection, supply, and relief. After the San Francisco Fire in 1906, it was the Army that took charge of disorder and administered the emergency relief forces until civilian organization could be formed. In the Galveston flood, the Mount Pelee disaster, during the floods on the Ohio in 1912, and in early every grave civil emergency in our history, the Army made similar records of accomplishment for which there are huge files of grateful letters of appreciation. Over a year ago, in the cold fields of West Virginia, a situation arose which promised untold difficulties for industry and for the country generally. The Army assumed control of the situation and in the friendliest possible manner persuaded both parties to the dispute that nothing could be gained through the use of force just as it had previously done in the Western Mine troubles. The subsidence was so sudden that few citizens realize the seriousness of the case. The settlement was made by the mere convincing of good Americans that the rights of the public are greater than the rights of any class or classes.

ARMY OFFICERS HOLD MANY IMPORTANT CIVIL ADMINISTRATIVE POSITIONS

Many Americans are surprised that the Army is able to accomplish what it does in the way of civic accomplishment. They forget that the War Department is one of the greatest administrative schools in the country. I have looked up the record of former regular army officers and I was really amazed at its excellence. There is scarcely a high office under the Government, to say nothing of high achievements in private life, that has not been attained to by army officers. Statesmen, lawyers, financiers, authors, even artists of world renown—all had their training in the service of the Regular Army. I might point to a few examples at the present day. The Governor General of the Philippines, our most important foreign possession, the head of the Bureau of the Budget, a new undertaking that is absorbing the minds of our statesmen—the President of the Radio Corporation of America—the Ambassador to Cuba—the Governor of the Panama Canal Zone—the head of the Veterans' Bureau—all of these are posts of predominant importance, and all are held by public servants who have been until recently officers of the Regular Army. It has been suggested that the so-called Chester concessions in Turkey, arranged for by a naval officer, be administered by an officer of the Army, the latter incidentally one who built the Panama Canal. Americans are proud of the record of Mr. Hoover's relief organization in Europe. Except for Mr. Hoover and a few civilian assistants, this was the work of the Army. Five colonels of the Regular Army acted as Mr. Hoover's principal assistants either in Paris or at the head of important missions. More than four hundred officers and non-commissioned officers of the Army and many men were engaged

in this work, which has been conducted under the same general direction both in Russia and the Near East. The distribution of foodstuffs and clothing which has been going on in those localities during the past year has been done under the direction of officers of the Army. All of this proves the value of the Army as an administrative school alone. All of it is a by-product of national defense.

RED TAPE EXPLAINED

The Army is often criticised for its so-called "red tape." The critics fail to appreciate that such a huge organization, open as it is to attack from any citizen of this country, must be conservative and accurate, both of which qualities demand recognized form of procedure. The very citizen who criticises us for red tape might have sent us one of the countless queries which we receive daily, such as, "Did George Washington really throw a dollar across the Potomac?" or "Who originated the term 'buddy'?" If a citizen asks such question as these in good faith we must answer them, for ours is also his business. During one month in 1919, the average number of pieces of mail received daily at the Adjutant General's office was over half a million. Over 80 million pieces were received in the year. In the files of the office are records of over 30 million individuals. The records of the office occupy 83,000 filing cabinets and more than 450,000 square feet of floor space. Yet we are criticised for being formal.

ADJUTANT GENERAL'S HUGE TASK. ARMY LAWYERS RANK HIGH

The Adjutant General's office is but one of the many in the department. Every known phase of human activity is involved in our administrative calendar. Does the citizen realize that in addition to training young men for war, we are required to train many thousands in purely vocational and educational features? Officers must pay the Army, keep accounts for the Army, give spiritual guidance and, in short, administer the Army according to the most civilized concept of human administration. Our military jurisprudence has been pronounced excellent by some of the best civil jurists. Our military lawyers, or judge advocates, rank among the best the country has known. In their past lists one finds such men as Henry Wheaton, Minister to Denmark and Prussia, and later Professor at Harvard; the illustrious Joseph Holt (the John Marshall of military justice), who was also Postmaster General and Secretary of War; John A. Bingham, later Chairman of the Judiciary Committee of the House of Representatives; George B. Davis, who represented our country at the Hague Convention in 1899 and whose book on International Law is widely used in colleges and universities throughout the country. Finally there should be mentioned Enoch Crowder, who administered the great American draft of the World War and who is now Ambassador to Cuba.

The military work of the Judge Advocate General is but a fraction of his entire responsibility. Yet the volume of this work alone was estimated by experienced observers in one year to be comparably equal to the

work of the supreme appellate courts of thirty-nine states combined. A large part of the work of this Department has been connected with the operations of the War Claims Board, which has handled claims amounting altogether to approximately \$4,000,000,000 in the form of suspended contracts.

During the war there were made approximately 150,000 contracts, and there were 15,000 cancellations, afterwards. There have also been large undertakings in the adjustment of patent cases. The special ability of the officers of this department has impressed the higher officials of our government, and in recent years the Attorney General has adhered to the policy of refraining from expressing his opinions relative to War Department matters before receiving the opinion on the subject from the Judge Advocate General.

ARMY OFFICER IS DIRECTOR OF THE BUDGET

When the important Bureau of the Budget was established several army officers were assigned to its organization, and eventually a retired officer, formerly Chief of Finance of the Regular Army, was made Director of this Bureau. I sometimes hear of individuals who appear surprised that army officers should be entrusted with such important and specialized work. Here again is an instance of ignorance of the great administrative schooling of the Army. The Chief of the Army Finance Department has a rare opportunity to master the science of finance and economy.

FINANCE DEPARTMENT'S REMARKABLY EFFICIENT RECORD

An example of the excellent administration of Army Finance is offered in a recent report of the Budget Bureau, calling attention to the fact that the War Department has established a remarkable record in the advantage taken of discounts on payment of obligation. The Director of the Budget expressed his doubt if any private business concern had ever equalled this record. I will read the record:

	Discounts taken	Discounts lost	Percent. lost
Fiscal year 1920.....	\$273,179.93	\$38,327.82	12.30
Fiscal year 1921.....	477,979.32	40,728.04	7.90
Fiscal year 1922.....	249,423.73	7,327.68	2.07
July to February 1923.....	141,019.22	2,784.75	1.94

This final record includes a record for the month of February of 99.51 per cent efficiency in use of discount, and in nearly all cases of failure there was a practical reason for failure.

Few Americans appreciate the difficulties which were faced by the War Department after the World War in connection with disposal of surplus property. It seemed a simple matter to dispose of our stocks. Various liquidation plans were put forth, some enthusiastic gentlemen even going so far as to urge that they be destroyed, since their sales or disposal otherwise would put an undue strain upon an already sensitive market.

Our belief has been, however, that no matter how much we wish to avoid a disturbance to the market, we must, nevertheless, realize that property is created for the welfare of mankind and that it must receive the protection of the government. We have accordingly liquidated our surplus in such manner that there have been no appreciable complaints from industrial circles and yet we have disposed of over four million dollars' worth of goods. Although much of this progress was made during very slack periods on the market, we have actually reclaimed approximately one billion dollars for the Treasury.

ONLY 13.5 PER CENT OF FEDERAL BUDGET FOR NATIONAL DEFENSE

Next to the belief that army officers are incapable of handling big business and finance, which I trust I have counteracted by the few brief proofs to the contrary which I have just offered, there is among our citizens the belief that we pay too much for our army. This belief is fostered by certain pacifist organizations which are continually circulating incorrect and misleading statistics relative to the cost of national defense. Typical of this false propaganda was a recent statement purporting to be an official analysis of the Budget, wherein it was claimed that 85 per cent of our Budget will go for past and future wars. The real reports of the Budget proves that but 13.5 per cent of the Federal Budget is for present national defense and only 32.7 per cent for purposes relating to past wars as well as present defense, including pensions, insurance and similar items. One cannot condemn too severely the tactics of those who thus seek to mislead the American public concerning such a vital matter as national defense.

It is important for us occasionally to study our basic principles of Government. We should remember that our government is a dual one, whereby the states and communities delegate to the Federal Government only those functions which cannot be administered separately. It was stated by the makers of our Constitution that the primary purpose of our General Government is self defense. John Hay and Alexander Hamilton, the brilliant authors of those articles in the "Federalist" which had so much to do with the adoption of our Constitution, repeatedly observed that by the nature of our social principles, the primary expenditures of the new Federal Government would be for security against aggression from without and confusion within. Is it now surprising that at the close of a great war one-third of our budget should be for past and present military purposes and about one-eighth for present national defense? If we did not have at least this much provision, would it not be likely that we should soon face, as Hamilton remarked, disgraceful disintegration within and shameful acquiescence to the desires of aggressors from without?

ARMY IS NATIONAL INSURANCE PAYING "DIVIDENDS" OF SERVICE EVERY DAY

An analysis of city and state governmental budgets in thirteen of our largest cities indicates that out of every dollar of taxes approximately $2\frac{1}{2}$

cents is spent for the upkeep of our army, and about 6 cents for army and navy together. If the radical pacifists succeeded in their desire to do away with our entire military organization the result would merely reduce the dollar of taxation to about 97½ cents. Such a policy of false economy would be laughed at by a business man, preparing for the insurance of his property. In one year the policyholders of insurance companies in the United States received from their policies over one billion dollars. It is presumable that policyholders paid more than that for their policies. It is plain that we pay for national defense less than a fifth of what our individuals pay for their own protection or the protection of their private property.

No country has made more determined efforts than ours to remove possible causes for war and to lighten burdens of preparedness. For further developments we must wait until all peoples are willing to follow the example which we have already set. We cannot even trust our own citizens to the unrestricted play of their own impulses and temptation. In 1920 our people employed sheriffs, police and similar forces with a total strength of twice the size of our present regular army. Added to this were 50,000 firemen, employed for protection against fires, which we do not invite and yet which occur to the detriment of civilization in the same unexpected manner as do wars, which we should also insure against by competent measures for national defense.

OUR ARMY IS SMALLEST SAVE GERMANY'S

I have been asked the question, "Why do we not set an example in reduction of military forces, in hopes that other countries will follow?" These questioners fail to realize that what we have now is a very generous example of reduction. We are reduced proportionately below the military strength allowed Germany, which is believed to be the minimum necessary for their police and which is considered absolutely safe against the danger of militarism. Ours is the smallest army among the great powers, except for Germany, which is a few thousand smaller. The percentage of the total budget spent for military purposes is also smaller in our case than in any other except Germany. If we were prepared for war in proportion to our population we should have an army of over a million men. If the proportion were to national wealth we should have even more. Yet we actually have only about 118,000 men.

PRESENT SYSTEM OF NATIONAL DEFENSE EXPLAINED

We now have a system of national defense which enables us to maintain the smallest regular army, in proportion to population, not only among the great powers of Europe, but also among the countries of our continent, excluding Canada, which is, of course, a part of the British Empire. The essential parts of our new system cannot be neglected. It is necessary to maintain an efficient national guard and to supplement the regular army and also give the states control over their own forces. It is fully as impor-

tant to develop the Organized Reserves. Above all it is vitally important to train our young men in the Citizens' Military Training Camps and in the units of the Reserve Officers' Training Corps. The President has stated that he would like to see at least 100,000 young men in training in the Citizens' Military Training Camps each summer. Actually we have but 30,000. The National Guard is not developed to the standard set in the Defense Act. There is a tendency to cut the National Guard among some of the states. You should remember that for each dollar spent by the state for National Guard purposes, the Federal Government pays into the state nearly two.

REAL DANGER IN FURTHER REDUCTION OF ARMY

Americans need not be afraid of militarism as long as their own hearts are set against war. They need have no fear of the growth of a militaristic class, as long as they take the interest in national defense that the responsibilities of citizenship demand of them. They should, however, be on guard against the dangers of going too far in the desire for peace. We should obey the words of our past leaders who urged us to be industrious and constructive, but to resist alike the coercion and the aggression of those who would interfere with our destiny. Our ideal should be to attain to the balance of mind and body. Healthy in body, sane in mind, and reasonably prepared for his own self-defense, the American citizen can look forward with the knowledge that he is fit to carry on the glorious traditions of his forefathers. In the words of our first great leader, George Washington, "If we desire to secure peace, one of the most powerful instruments of our rising prosperity, it must be known that we are at all times ready for war." Washington never urged that we prepare for a war of aggression, but that we should be always prepared to defend ourselves, and preparation for defense is the policy of the War Department today.

THE STABILITY OF MERCUROCHROME SOLUTIONS.*

D. LOESER, E. R. HAMBURGER AND A. L. KONWISER.

Since its introduction in 1919 by Young, White and Swartz, the therapeutic value of mercurochrome as a general antiseptic and germicidal drug has been well established, especially in infections of the genito-urinary tract. The original pharmacological studies of Young, White, and Swartz¹ indicated that this drug could be administered to dogs intravenously in dosages of 10 milligrams per kilogram of body weight with impunity. These experimental results were confirmed by Piper² in 1922, who investigated the value of intravenous injections of mercurochrome in treating puerperal septicemias. The following year Hill and Colston³ of the Brady Urological Clinic, Johns Hopkins Hospital, demonstrated that the intravenous injections of rabbits had a bacteriostatic action on both the

*Contribution Number 4 from The New York Intravenous Laboratory.

urine and the blood. This preliminary work has led to an extensive use of intravenous mercurochrome injections in a large variety of conditions, such as septicemias due to colon bacilli, staphylococci, or streptococci, abscesses, pyelitis, cystitis, pneumonia, scarlet fever, gonorrhea.

A survey of these papers reveals one significant statement. Despite the fact that mercurochrome is supposedly a stable dye, emphasis is laid upon the use of a freshly prepared solution for clinical work. Doubting the validity of this statement, a series of toxicity tests were carried out in this laboratory which proved conclusively that the toxicity of a 1% mercurochrome solution, when properly prepared, remains unaltered over a period of six months. The details of these tests are reported below.

A further search of the literature revealed the fact that the only experimental basis upon which this demand for a freshly prepared solution could be based was the work of Swartz and Davis⁴ in 1921. They observed that a stock solution of mercurochrome-220, which had been standing in the laboratory for some time, decreased markedly in bactericidal power. Desiring to check these results, they allowed a freshly prepared solution which killed gonococci in a 1 to 16,000 dilution after twenty minutes, to stand for one month in a Pyrex flask. Upon retesting, growths were found in solutions as high as 1 to 8,000 after a twenty minute exposure. We have been unable to duplicate these results however, with our solution, as will be shown below, and have found that the toxicity remains unaltered for at least six months.

The fact that both the toxicity and bactericidal power of a 1% solution of mercurochrome-220, when properly prepared, remain unaltered over a period of at least six months seems to be proven. It might be pointed out in passing that the decrease in bactericidal power found by Swartz and Davis may be ascribed to the effect of oxidation inasmuch as no special precautions seem to have been taken to prevent the latter.

EXPERIMENTAL

On April 11th and 18th of this year (1924) we prepared 1% aqueous solutions of mercurochrome according to our strict laboratory routine, maintaining the solutions without access to air and with as little disturbance as possible during the course of preparation. They were then carefully filtered, filled into ampoules, sealed, and sterilized at fifteen pounds pressure. At various dates extending over a period of six months we made careful toxicity tests on white rats, in most cases running a blank on the same group of rats. For this blank, freshly prepared 1% solutions of mercurochrome were employed. The same dry salt was used in the preparation of all solutions.

(a) *Toxicity Tests.*

The technic used in these tests is the standard technic developed in this laboratory and has been fully described elsewhere.⁵ The results are reported in Table I. As can be seen from a comparison of the figures, there

is no difference in toxicity between the freshly prepared solution and those which stood for a period of time varying from one to six months.

TABLE I—TOXICITY TESTS

Freshly Prepared Solutions

Date Toxicity Test	Mmg. per Kilo	dye injected	14	28	36	42	50	56	64	70	84	100
5/19/24	{	Injected	1	2	..	1	..	1	1	2	2	1
		Survived	1	1	..	0*	..	0*	0†	0†	0†	0†
7/25/24	{	Injected	..	..	..	1	1	1	1	1	..	..
		Survived	..	..	..	0*	0*	0†	0†	0†	..	..
9/16/24	{	Injected	..	1	3	1	1	..	..	..	..	..
		Survived	..	1	0†	0†	0†	..	..	..	..	..
10/15/24	{	Injected	..	4	4	..	..	..	..	..	..	..
		Survived	..	4	1†	..	..	..	..	..	..	..

Solution Prepared 4/11/24

Date Toxicity Test	Mmg. per Kilo	dye injected	14	28	36	42	50	56	64	70	84	100
6/6/24	{	Injected	..	1	..	1	..	1	..	1	..	1
		Survived	..	1	..	0†	..	0†	..	0†	..	0†
7/25/24	{	Injected	..	..	..	1	1	1	1	1	..	..
		Survived	..	..	..	0*	0†	0†	0†	0†	..	..
9/16/24	{	Injected	..	..	..	1	1	1	1	1	..	..
		Survived	..	..	..	0†	0†	0†	0†	0†	..	..
9/25/24	{	Injected	..	1	3	2	1	..	..	..	..	..
		Survived	..	1	1†	0†	0†	..	..	..	..	..
10/15/24	{	Injected	..	4	4	..	..	..	..	..	..	..
		Survived	..	4	3*	..	..	..	..	..	..	..

Solution Prepared 4/18/24

Date Toxicity Test	Mmg. per Kilo	dye injected	14	28	36	42	50	56	64	70	84	100
6/6/24	{	Injected	..	..	..	1	..	1	..	1	1	..
		Survived	..	..	..	1	..	0†	..	0†	0†	..
7/25/24	{	Injected	..	..	..	1	1	1	1	1	..	..
		Survived	..	..	..	0†	0†	0†	0†	0†	..	..
9/16/24	{	Injected	..	1	2	1	1	..	..	..	..	..
		Survived	..	1	2	0†	0†	..	..	..	..	..
10/25/24	{	Injected	..	4	4	..	..	..	..	..	..	..
		Survived	..	4	3*	..	..	..	..	..	..	..

Note: *Died after five days. †Died within five days.

(b) *Bactericidal Tests.*

Unfortunately we did not run across the work of Swartz and Davis until after our toxicity tests had been completed. We were therefore unable to check the bactericidal power month by month, as with the toxicity. Tests were run only on the solutions which had stood for six months.

The bactericidal power was tested as follows: A 24-hour standard

extract broth culture of the organism was thoroughly shaken and mixed, and one-tenth of a cubic centimeter of the culture pipetted into each of a number of sterile tubes containing varying concentrations of mercurochrome-220 as indicated in the tables. At definite time intervals a standard loopful (4 mm. loop) was transplanted from the mercurochrome solutions to sterile tubes of standard extract broth. The latter were incubated at 37.5°C and read after 24 hours. Both *Staphylococcus Albus* and *Coli Communis* were used as the test organisms. As a check all tubes in which growth did not occur were inoculated with the organism tested. In all cases growth occurred after such inoculation proving that the medium supported growth. The solutions tested were a freshly prepared 1% solution, and the 1% solution which had been prepared on April 11th and allowed to stand for six months, guarding against oxidation, etc. The results are reported in Tables II and III.

As can be seen from the tables, neither an increase nor a decrease in bactericidal power occurred between the freshly prepared solution and the one which had stood for six months, thus indicating that the bactericidal power of a properly prepared and properly stored solution of mercurochrome does not alter over a period of six months.

COMMENT

Our final results as here reported indicate that the toxicity of a 1% solution of mercurochrome-220 does not increase during a period of six months. In fact, slight variations seem to favor the old solutions. We have made careful chemical tests on the six months old solutions and find that they respond to those tests given in New and Non-Official Remedies. There appears to be no break-down whatever of the solution. It is most plausible to assume that if any break-down were to occur, it would cause a release of some of the mercury from the intermolecular combination, and in this manner increase the toxicity of the solutions. Similarly, an increase in the bactericidal properties, due to the release of mercury, would be expected. As shown above, however, the bactericidal power neither increases nor decreases over a period of six months. There is no doubt whatever but that the solution is perfectly stable over a period of at least six months, if maintained in sealed ampoules.

Recent reports of serious reactions to the injection of the drug, in spite of the splendid reports by research workers, and clinicians, lead to the thought that possibly such reactions are due to hastily made, extemporaneous solutions. Such is the principal cause of arsphenamine reactions. Impure, unsterilized water, or impurities due to lack of proper preparation, or lack of knowledge of methods of preparing intravenous solutions, are definitely causes of reactions. A properly prepared, standardized and biologically tested solution, which could be maintained over a period of time, would enable the clinician to determine whether the reactions are due to the mercurochrome per se, or to the use of faulty solutions.

CONCLUSIONS

The minimum lethal dose of mercurochrome (in 1% solution) for white rat is approximately 36 milligrams per kilogram of body weight.

The toxicity and bactericidal properties of a carefully prepared 1% solution of mercurochrome-220 remain unaltered over a period of at least six months provided that the solution is properly prepared and maintained in sealed ampoules. Based upon these facts, the statement that a freshly prepared solution only should be used in clinical work seems unwarranted.

TABLE II
Coli Communis 24 Hour Reading

Time intervals	5 Min.		10 Min.		15 Min.		20 Min.	
Strength of								
Mercurochrome	Old	Fresh	Old	Fresh	Old	Fresh	Old	Fresh
1/200	—	—	—	—	—	—	—	—
1/400	—	—	—	—	—	—	—	—
1/800	—	+	—	—	—	—	—	—
1/1600	+	+	+	+	—	—	—	—
1/3200	+	+	+	+	+	+	—	—

+ = Growth in 24 hours, as estimated by turbidity of broth.

— = No growth in 24 hours, as estimated by turbidity of broth.

All blanks (not reported here) gave positive results.

All tubes showing no growth upon inoculation with organism give positive results in 24 hours.

Old = Solution of mercurochrome which had stood for six months in sealed ampoules (originally prepared April 11, 1924).

Fresh = 1% solution of mercurochrome used immediately after preparation.

TABLE III
Staphylococcus Albus 24 Hour Reading

Time intervals	10 Min.		20 Min.	
Strength of				
Mercurochrome	Old	Fresh	Old	Fresh
1/200	—	—	—	—
1/400	+	—	—	—
1/800	+	+	+	—
1/1600	+	+	+	+
1/3200	+	+	+	+

Footnotes to Table II also apply to this table.

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Since the writing of this article, further toxicity tests which have been made indicate that the solution is still stable after a period of nine months.

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LE PHARE DE FRANCE

Paris

(The Lighthouse for Men Blinded in Battle)

The Phare de France in Paris was founded in 1915 by Winifred Holt Mather sent by the Committee for Men Blinded in Battle, New York

France has the largest number of battle blind, of the Allies, and the Phare is the only service devoted exclusively to them. It is the re-educational school, social center and home for war blind of all the departments and the colonies. Besides the various local industries, knitting, Braille printing, weaving, caning, etc., it maintains a circulating library, bimonthly review of current topics, and an information bureau.

Over a thousand graduates turn to the Phare in any need, and hundreds of others have been aided in minor ways. It has ministered to war blind in every rank in life. It has trained men to become professors and lawyers and it has established others in industrial life and on farms. About fifty-two blind are housed at the present time, each with a different reaction to severe head wounds, in many cases, complicated by internal wounds, or the loss of an arm or leg, with the resulting shattered nerves. Many men returning to the Phare from the country for consultation, **x-rays, etc., remain temporarily** and guides are furnished for their convenience. Owing to the spacious rooms, high ceilings and sunlight, as well as the garden, terrace and abundance of good food, the general health is greatly promoted, but each particular case is followed up by a staff of specialists.

Doctor Valude is the Medecin-Chef (also of the Quinze-Vingts). The general health is daily inspected by Doctor Garnier. The dental surgery so necessary in the results of face wounds is volunteered by Doctor John R. Merrill of the University of Pennsylvania.

Although the Phare at present permanently houses fifty-two war blind, a villa in the garden will be remodeled to accommodate a dozen more, who are working in the city and are most eager for the homelike atmosphere of the Phare.

The Phare has been directed since its foundation by Mademoiselle de Villedon, a graduate nurse, a woman of splendid achievement and fine **executive ability, as well as one of the greatest authorities** on the problems of the battle blind. She has been most ably assisted by Miss Genevieve Mott Tyler, who has given her services unsparingly to this noble institution, and has been of the greatest possible service to the soldiers.

The Phare de France is one of the enduring services of American overseas relief and a noble tribute of American sympathy for France.

Our readers will be glad to know that through the untiring efforts of Mrs. Archibald Freer of Chicago, the Paris-Chicago Hospital Foundation was authorized to collect money for distribution to some form of hospital organization in or near Paris. Of the sum collected, two hundred thousand francs were transmitted last month as a donation to Le Phare de France, the only condition being that one of the rooms in said institution should be known as the "Henry Favill Room" in constant memory of him. A permanent metal plate has been placed on the entrance door of said endowed room with a suitable and very beautiful inscription.

We take pleasure in reprinting an account of this noble work as published a short time ago in the *Boston Transcript*:

A LIGHTHOUSE THAT GUIDES BLINDED SOLDIERS FROM SHADOW TO
SUNSHINE

You will see the slogan "Save the Lighthouse" very frequently in the newspapers, and will probably want to know what the Lighthouse is, and why it should be saved. The Lighthouse, with its three rays piercing the darkness, is a symbol—a symbol of light dispelling gloom, a symbol of American friendship for France, and a symbol of the memory of those Americans who fell fighting in France by the side of their French comrades-in-arms. But it is more than that, because it is a symbol in good working order, one which has accomplished incalculable good, thanks to American generosity, and with the help of the American public one which will continue to bring untold benefits to the 3,500 war-blind of France.

The first chapter in the story of the Lighthouse opened nine years ago, during the tragic winter of 1914-1915, when a letter from France to Miss Winifred Holt, the well-known founder of the Lighthouses in this country and a devoted and life-long worker in the cause of the blind, described "eighty-four blind soldiers being looked after by only four Sisters of Charity, sitting in their horizon-blue uniforms beside their beds, immobile, helpless, with nothing being done to alleviate their hopelessness, no attempt at work for their hands, or distraction of any kind. The impression made by those men, with their God-given eyes sacrificed in this terrible war, never can be forgotten. They were so cast down; if only something could be done for their morale; also they needed many things, blankets, wrappers, pillows, but above all, some distraction. Oh, the pathos of those hopeless men with their bandaged eyes, who had given so much for their country!"

A LETTER'S ANSWER

The Lighthouse was the answer to this letter, describing the pitiful condition of the first war-blind. A committee was formed in New York under the presidency of the late Hon. Joseph H. Choate, "The Committee for Men Blinded in Battle," money was contributed, and in June, 1915, Miss Holt landed in France; and the work for the war-blind was started. The first small classes were gathered together for re-education, gifts of all sorts distributed, and the severely wounded visited in the hospitals.

Plans were being laid, a French committee founded, workers gathered together and trained for their special task, and a suitable building searched for.

PREPARING A HOME

At No. 14 rue Daru, in the beautiful Elysee quarter of Paris, not far from the Triumphal Arch where the Unknown Soldier lies today in fitting honor, an eighteen century palace was found untenanted and standing in the midst of spacious grounds. It was the property of the Vatican, the official residence of the Papal Nuncio, unoccupied since the anti-Clerical movement of 1904, which led to the severing of relations between the French Government and Pope Pius X. The garden, the forty-four rooms of the main building, the roomy coach house and former stables capable of transformation into workshops, made it ideal, and it was rented for the committee by the Duchess de Talleyrand. Quickly everything was put in order, the installation of the looms, the electric Braille press and the gymnasium equipment was made, the State bed chambers filled with rows of white cots, the library shelves altered to hold the huge Braille volumes, an organ placed in the ballroom, typewriters and stenographic machines purchased; and in March, 1916, the doors of Lighthouse No. 3, "Le Phare de France," were opened to its first blind pupils.

Later, when the first sixty pupils were already well advanced in their training, the official opening and dedication of the Lighthouse, under the patronage of the President of the French Republic, took place. M. Poincare, and M. Jusserand, French Ambassador to the United States, were guided in their tour of inspection by the upright, gallant figure of an officer, on whose breast hung many medals for conspicuous bravery. He was blind.

FROM HIGHER MATHEMATICS TO CARPENTRY

An outline of the aims and methods of the Lighthouse is given below. These methods were a revelation to the Government officials of France, where little progress had been made in the teaching of the blind, and the Lighthouse was classified as a "Centre pour l'Instruction des Aveugles Intellectuels." Manual training, and reading and writing, had hitherto been all that had been considered possible for the blind. The Lighthouse teaches whatever will best help its blind pupils to become useful, happy **citizens of the seeing world** once more. They may study anything from higher mathematics to the most practical and lucrative trades open to them. Thus, the general re-education for all includes Braille reading, writing and **typewriting**. In addition, the following are some of the subjects that have been taught to individuals, according to their capacities and tastes: Patchwork, weaving, knitting by machine, massage, modelling, pottery, stenography (by a system especially invented for the pupils of the Lighthouse), bookkeeping, commercial studies (including training as sales agents), English, French, Spanish, and other languages, music, singing, gymnastics.

fencing, riding, skating, et cetera. Some of the more intellectual pupils attend lectures at the universities, the conservatories, et cetera. In addition to gymnastics and outdoor games and sports, recreation is offered by concerts and dances given at the Lighthouse, outings, and visits to musicales, concerts, theatres and the opera.

BLIND AS EDITORS AND PRINTERS

The Lighthouse has a circulating Braille library, and the pioneer electric Braille press in France. This press permits for the first time the publication of volumes in large editions, in the clearest point type. Four blind men work in the printing department.

The first number of the Braille magazine, *La Lumiere*, partially edited by the blind soldiers themselves, and sent out to their comrades in arms and in blindness, was issued in December, 1916. At first published once a month, the demand has been so great that it now appears every fortnight; it is sent free to a large number of subscribers all over France, and is very greatly appreciated by them. The press of the Lighthouse has also printed many books, which appeared for the first time in Braille—they range from Kipling's "Jungle Book" to a manual of anatomy, and include books of adventure, novels, history, biography, as well as books of instruction for the courses at the Lighthouse.

The printing of music was first begun at the Lighthouse, at the request of the soldiers there, by the issue of Braille copies of the anthem "America," with a French translation by one of the Lighthouse crew. The next order was for the printing of Gregorian chants, also a request of the men. While much music already exists in Braille, the effort of the Lighthouse is to print the songs and new music for which the soldiers clamor, as well as some classical compositions not in type for the blind.

FROM DISCOURAGEMENT TO HAPPINESS

The re-educational training of the Lighthouse fits each man to find work at which he can be self-supporting. The first pupil of the Lighthouse, on leaving, was employed as a stenographer-typist and telephone operator in the office of his former lieutenant. Men who were completely discouraged have been led to find a contented, useful future. The more highly educated have been able to reconstruct a life similar to that which they led before their shattering plunge into total blindness.

A major has become a director of studies at the *College Militaire*.

A former teacher took up his classes again in school.

A student has taken his degree in philosophy.

Another is an inspector for the French Board of Education.

A one-armed blind man has been teaching a class of twenty seeing men in a technical institution.

A brilliant student at the Lighthouse passed his examinations in law, and in competition with many seeing men won a scholarship at the Harvard Law School.

Another graduate is a judge in the *Cour de Cassation*.

The simpler men have done equally well in their own work. One man

has taken over his father's leather business, which he is now directing. The pupils in massage have had all the work they could do. Many have been successful as stenographers and secretaries, switchboard operators, and so on. A large group of blind men have been employed doing particularly delicate work on magnetos in the Thomson-Houston Electric Works near Bordeaux.

PAPERS BECOME PROPRIETORS

The Lighthouse first introduced machine-knitting for the blind into France. This is a highly desirable trade, as is shown by the fact that all the products of the Lighthouse workshops are contracted for by a big New York firm. Many graduate knitters are now making good incomes in their own homes, with the machines which the Lighthouse has given them, for on leaving, each graduate takes away with him as a gift the machine on which he has learned to knit. The work of some of these knitters has grown to such an extent that they have been forced to employ assistants to be able to fill their orders. One man, who had lost an arm as well as his sight, now has a shop with forty knitting machines purchased with his profits; of the forty men working for him, twenty are blind like himself.

Not a few of the soldiers have shown great inventiveness and ingenuity; several have suggested modifications and developments of the tools and machines which they use. One, who had lost not only his eyes but his right arm, adapted the typewriter for the use of other one-armed men. The Underwood Company has sold a number of machines with this improvement. This same man, by a simple invention, enabled himself and other one-armed workers to weave.

The work of the Lighthouse is with men, who, in addition to the terrible affliction of sudden blindness, have undergone severe nervous shock, and frequently have been badly wounded in other ways. When they come to the Lighthouse they are often broken men physically, and the victims of cruel discouragement and hopelessness, lacking the will to learn, and sometimes even to live. The Lighthouse must first restore strength to shattered bodies and morale, and then set about finding the work for which the man is most suited.

A WAITING LIST

Since the closing of the military hospitals in November of 1923, when the Lighthouse hastily set up extra beds in every room and even in the corridors to receive the blind men thus set adrift, there are no other beds in France for the war blind than those of the Lighthouse. One of the men received at that time had been imprisoned in a plaster cast since the war, and had to be taught like a baby to walk. Men are coming in today who have had no instruction whatsoever, who were returned to their homes from the hospitals untaught, and who have waited all these years in the misery of unoccupied blindness for the Lighthouse and its blessed gifts of work and freedom, self-reliance and a future.

There is a long waiting list of blinded soldiers—they are hoping for

their only chance for the re-education, the rehabilitation that will enable them to lead active, normal, happy lives. The Lighthouse's mission has not been fulfilled until every blind soldier whose eyes were sacrificed in our common cause has been given his chance.

LETTERS FROM THE MEN

Letters from the men to the founder of the Lighthouse say: "Before going to the Lighthouse I did not believe in the utility of re-education, and was very pessimistic as to the results, but today all has changed, for I feel that I can still be useful in the world, and work for my wife and child, instead of being a helpless burden." "I have not made my fortune yet, but I have paid my debts. I have the joy of independence, and I do not think about my blindness. The time passed at the Lighthouse, which I shall never forget, gave me back the desire to live by making it possible for me to become a useful and happy man in spite of it all." "You have so thoroughly understood our despair in the first hours of blindness, and to you we owe the fact that we are once more able to be independent, useful and happy citizens." "I entered the Lighthouse in the month of September, 1916, about five months after being wounded, with no plans, and no hope for the future. But I began to study immediately, thanks to the help received. . . . Some months afterwards I was as rapid on the typewriter as a seeing man, and could take stenography on the special machine at the speed of from seventy to seventy-five words a minute." "For the past month I have been living at the Lighthouse. Thanks to this splendid work, I feel that I am being born again into life." "I only know America on the map, and I did not know any Americans until I came to the Lighthouse. Now I feel a lasting gratitude to you and to all your countrymen. Thanks to them and thanks to you, I have been restored to usefulness and happiness, and I shall never forget the debt I owe."

Has America no debt to the blind soldier heroes of France? The 3,500 men who gave their sight in the World War, and who walk through their lives in perpetual darkness, the men whose sacrifices through the long days before Verdun helped to win our common cause?

Shall we help the Lighthouse to pay this debt for us?

Then "Save-the-Lighthouse!"—*Boston Transcript*.

PASSPORTS

Referring to our recent editorial on the Passport Nuisance, we are glad to note that progress is being made to abolish its worst features. A bill designed to do away with the expense and inconvenience to which every traveler abroad, either for business or pleasure, has been subjected to since the war in the matter of securing visas to their passports, was introduced in the house recently by Representative Hamilton Fish, Jr., [Rep., N. Y.]

The bill authorizes the President to waive visas altogether, or to

reduce or waive visa fees including the application fee, in the cases of nonimmigrant aliens desiring to visit the United States for a period not to exceed one year, provided "like treatment is accorded by the governments of the countries from which such aliens come to American nations, visiting such countries temporarily under similar conditions."

Mr. Fisk will ask an immediate hearing on the bill before the foreign affairs committee of which he is a member, and endeavor to have it passed at the present session.

DR. JOHN HUNTER

Our readers will undoubtedly be interested in some of the details regarding the death of Dr. John Hunter of Sydney, Australia, who, with Dr. N. D. Royle, came to America, at the invitation of Dr. William J. Mayo and Dr. Franklin H. Martin to deliver the John B. Murphy Oration in Surgery at the meeting of the Clinical Congress of the American College of Surgeons, held in New York, October 20, 1924. The work of Dr. Hunter and Dr. Royle in connection with spastic paralysis created unusual interest among the surgeons, orthopedists, and neurologists of the world.

After the New York meeting, Dr. Hunter went to London, and the following letter, from Dr. G. Elliot Smith, Professor of Anatomy, University of London, University College, gives the details of Dr. Hunter's visit in London, of his illness, and of his death:

"December 16, 1924.

Dear Dr. Franklin Martin:

In reply to your cablegram which has just reached me, I can tell you in a few words of the little there is to say about the terrible tragedy of poor Hunter's death. He arrived in London on 22nd November, apparently in exceptionally good health and full of energy. He threw himself at once into the business of demonstrating his work to the Physiologists and Clinicians in London, and gave a number of Lectures, and was going to start a more formal course on 8th December. On 3rd December he went up to Cambridge, and was very busy there with informal discussions as well as Public Lectures. He returned to London on 6th December because he was not well. On the following day, 7th December, it was found that he had a temperature of 104.6 and I got our best physician, Dr. Charles Bolton, to see him, and he sent him into hospital suffering from the most virulent form of enteric that Dr. Bolton had ever seen. His temperature remained at about 105 until the 10th December, when signs of cardiac failure showed themselves, and he died on that day. He was delirious a good part of the time and almost unceasingly talked about his experimental work. It appears that he had been ill from 1st December, but took no notice of it; as he was so absorbed in the task of convincing people here of the truth of his results that he went about for six days after the onset of the illness without realizing that he was seriously ill. He must have got the infection soon after leaving Quebec on 14th November. The whole business is unspeakably tragic, because he was certainly the most promising anatomist that we had, and I feel convinced that if he had been spared, he would have been perhaps the biggest figure in Scientific Medicine of the present generation.

Yours very truly,

(Signed) G. Elliot Smith, Professor of Anatomy."



BOOK REVIEWS

A DIABETIC MANUAL. For the mutual use of doctor and patient, by Elliott P. Joslin, M.D., Clinical professor of Medicine, Harvard Medical School; Consulting Physician, Boston City Hospital; Physician to New England Deaconess Hospital. Illustrated. Third Edition, thoroughly revised. Lea and Febiger, Philadelphia and New York. Price, \$2.00.

Joslin's splendid book of Diabetes is so well known that a detailed description is unnecessary. This is the third edition, which has been thoroughly revised and brought up to date.

It treats, of course, of insulin, diabetic arithmetic, a very clever series of questions and answers for the diabetic patient, and is chiefly devoted to the diet of diabetic individuals, acidosis, dietetic suggestions, receipts and menus, with a concluding chapter on laboratory tests useful to diabetic people.

It is really a most valuable manual both for the doctor and for intelligent patients, and as such we recommend it very highly.

A PHYSICIAN'S MANUAL OF VACCINE THERAPY. By G. H. Sherman, M.D., Detroit.

This little book gives a very creditable treatment of the results obtained by Bacterial Vaccine Therapy, based upon seventeen years of specialized study by the author. After writing of Therapeutic Immunization, Bacterial Intoxication, tonic effect of vaccines, the bacteriology of the more common pathogenic organisms, etc.

The remainder of the book treats of individual diseases, alphabetically arranged, from abscesses to whooping-cough, including dosage, methods, etc.

OPERATIVE SURGERY. Covering the Operative Technic involved in the operations of general and special surgery. By Warren Stone Bickham, M. D., F. A. C. S. Former Surgeon in charge of General Surgery, Manhattan State Hospital, New York, Former Visiting Surgeon to Charity and to Touro Hospitals, New Orleans. In six octavo volumes totalling approximately 5400 pages with 6378 illustrations, mostly original and separate Desk Index Volume. Volume V containing 880 pages with 1118 illustrations. Philadelphia and London; W. B. Saunders Company, 1924. Cloth, \$10.00 per volume. Sold by subscription only. Index volume free.

We have already exhausted our vocabulary in words of praise for this monumental work. It is the best, most complete work on surgery now extant, a master work in every respect, of which the author can well afford to be proud, as well as the surgical and medical profession, and we should include the publishers, W. B. Saunders Company, for their enterprise.

Volume V before us treats of the operation upon the Colo-Recto-Anal Tract, kidneys and suprarenal bodies, ureters, bladder, and the various affections of the male sex organs. The work is complete in itself on the subject of Genito-Urinary Surgery.

No one can appreciate this book without seeing it, and we have not the slightest doubt that every progressive surgeon has subscribed for this wonderful work.

A TEXT BOOK OF PATHOLOGY. By William G. MacCallum, M. D., Professor of Pathology and Bacteriology, Johns Hopkins University. Third edition. Thoroughly revised. Octavo volume of 1,162 pages with 575 original illustrations. Philadelphia and London: W. B. Saunders Company, 1924. Cloth, \$10.00 net.

This may not be the best, but it is certainly the most popular text book on pathology, and being the most popular, many believe it is the best, to which number the reviewer belongs. It is a leading text book in most medical schools in the country, and very little can be added about a book which is so well known.

This edition, of course, has been thoroughly revised and brought well up to date and stands now, as before, at the very front of modern pathology.

PHYSICAL DIAGNOSIS. By W. D. Rose, Lecturer on Physical Diagnosis and Associate Professor of Medicine in the University of Arkansas; Visiting Physician Little Rock City Hospital, Baptist Hospital, and St. Vincent's Infirmary, Little Rock, Ark. C. V. Mosby Company, St. Louis. Price \$8.50.

This is the fourth edition and is a very practical text book on physical diagnosis, especially serviceable for students and the general practitioner. It is splendidly illustrated. The text is clear and easily understood, and it is a book which we can recommend in every way.

This new edition contains a number of changes in the text and also a number of new illustrations with other corrections necessary to bring it up to date.

THE MEDICAL CLINICS OF NORTH AMERICA. (Issued serially, one number every other month.) Volume VIII, Number III, November, 1924. (Philadelphia Number.) Per Clinic year (July 1924 to May 1925): Paper \$12.00; cloth \$16.00 net. Philadelphia and London: W. B. Saunders Company.

This is the Philadelphia number, and it is an admirable issue. The leading clinicians of Philadelphia have contributed, among whom may be mentioned Professors Jump, John H. Musse, Jr., George William Norris, O. H. Pepper, O. H. Petty, David Riesman, John J. Stokes, Gabriel Tuck, Elmer H. Funk and a number of other able clinicians. Pneumonia, cardiac cases, gastric carcinoma, diabetis, tuberculosis, hemiplegia, and asthma are among some of the subjects discussed.

LOCAL ANESTHESIA SIMPLIFIED. By John Jacob Posner, D. D. S., New York, Chief of the dental department Harlem dispensary, former instructor in Oral Surgery, New York Homeopathic Medical College and Flower Hospital, visiting dental surgeon, St. Luke's Hospital, New York. C. V. Mosby Company, St. Louis. Price \$3.50.

This book of some hundred and ten pages gives a most excellent resume of local anesthesia for dentists. And through a large number of pictures and a very clear and easily understood text that simplifies this important matter very materially, it will be of great value to those engaged in this kind of work. It has our cordial recommendation.

CONCEALED TUBERCULOSIS OR "THE TIRED SICKNESS." A Clinical Study upon the Exhaustion Type of Hidden Tuberculous Infections by George Douglas Head, B. S., M. D., Philadelphia. P. Blakiston's Son & Co., 1012 Walnut Street. Price \$2.00.

This little book gives a very large number of valuable suggestions in relation to what is termed "concealed tuberculosis," referring to hidden tubercular infections. It refers especially to the long standing cases of physical and nervous exhaustion which are associated with the presence of unrecognized tubercular infection.

As the author well says, this type of tuberculosis fails of recognition unless specific tubercular tests are used in establishing the nature of the infection. We recommend this book most highly to every practicing physician as it may lead to the detection of the true cause of a patient's complaining of being tired and played out.

MANUAL OF OBSTETRICS. By John Cooke Hirst, M. D., Associate in Gynecology and Obstetrics, Graduate School of Medicine, University of Pennsylvania; Associate in Obstetrics, School of Medicine, University of Pennsylvania. Second edition, entirely reset. Philadelphia and London: W. B. Saunders Company, 1924. Cloth, \$4.50 net.

Everything that Hirst writes is of special value, and his manual of obstetrics is super-excellent. This edition—the second edition—has been entirely reset and brought up to date. Many new illustrations have been added, likewise considerable new material like Rubens test for closure of the fallopian tubes, the Potter method of version, puerperal sepsis, placenta accreta and a number of other additions have been made.

We most cordially recommend this book to the general practitioner and medical students.

OPERATIVE SURGERY. Covering the Operative Technic involved in the operations of general and special surgery. By Warren Stone Bickham, M. D., F. A. C. S. In six octavo volumes. Volume VI, completing this set, contains 989 pages with 1,224 illustrations. Philadelphia and

London: W. B. Saunders Company, 1924. Cloth, \$10.00 per volume. Sold by subscription only. Index volume free.

The sixth and last volume of Bickham's monumental work on surgery is before us of the same high standard as all the other volumes preceding. In addition, there is a separate volume consisting of a general index to Bickham's "Operative Surgery" from volume one to six, inclusive.

Volume six deals largely with the operative surgery upon the male and female genative organs including operations upon the pregnant uterus, **puerperal uterus**, ectopic pregnancy, operations on the new born and operations for deformities and disabilities not included in the preceding chapters. The illustrations are numerous and superexcellent as is, of course, the whole book, and it is certainly a privilege to congratulate the profession in having Bickham's "Operative Surgery" the finest work now extant on this subject. It is a marvel to all how one man with such little assistance could contribute to the profession these six splendid volumes covering the highest operative technique involved in all operations of general and special surgery. No practicing surgeon can afford to be without a copy of this magnificent contribution to surgical science.

PERSONAL HYGIENE FOR NURSES. Adapted also to the use of students of Physical Education and other health specialists by John Wymond Miller Bunker, Ph. D., Associate Editor of Biochemistry and Physiology, Massachusetts Institute of Technology; Lecturer in Physiology, the Boston School of Physical Education, and Clair Elsmere Turner, M. A., C. P. H., Associate Professor of Biology and Public Health, Massachusetts Institute of Technology; Associate Professor of Hygiene, Tufts College Medical and Dental Schools. Illustrated. The C. V. Mosby Company. Price \$2.00.

"Personal Hygiene for Nurses" is a simple but quite satisfactory book, teaching the ordinary facts of hygiene, intended especially for nurses, also students interested in physical education. It contains a lot of invaluable information, and it is a book to be highly recommended. It is written in a delightful way, easily understood and very instructive.

GUY PATIN AND THE MEDICAL PROFESSION IN PARIS IN THE XVIIITH CENTURY. By Francis R. Packard, M. D., Author of "Life and Times of Ambroise Pare," Editor of Annals of Medical History, with seventeen illustrations including nine full page plates. Paul B. Hoeber, Inc., New York. Price \$4.00.

The intention of this volume is to bring us back to the time and understanding of Guy Patin and the medical profession in Paris in the Seventeenth Century. It contains a large number of letters and other valuable information about medicine, quackery, religion, and other interesting topics of that day. It is indeed a rare treasure to those who are interested in matters of medical history. The book is written in a most interesting manner, and we can cordially recommend it to any reader.



The Suprarenal Principle.—When the active principle of suprarenal glands was isolated for the first time—by Takamine in 1900—it was named Adrenalin, from the fact that the medullary portion of the suprarenal gland is properly known as the adrenal body. The history of suprarenal therapy has been written for the most part from experience with Adrenalin, and the majority of writers on the subject have given the product its proper name as designated by its discoverer well-nigh a quarter of a century ago.

There is now an Adrenalin family—in addition to the liquid in vials and ampoules: an ointment, a suppository, and an inhalant, all bearing the name and all depending upon the presence of Adrenalin in the formula for their efficacy.

The manufacturers, Parke, Davis & Co., announce that they have a booklet containing practical information on all the Adrenalin products, which they will be glad to send to any inquiring physician.

U. of C. Gets Conditional Gift.—The General Educational Board has made a conditional gift of \$2,000,000 toward the University of Chicago's endowment fund, the condition being that the university raise \$4,000,000 additional for the same purpose. The first objective of the university for 1925 in its development program is to raise \$6,500,000 for the endowment of instruction and research; the second, to raise \$11,000,000 for new buildings.

New Wesley Hospital.—The chairman of the board of Wesley Hospital announced, January 19, that the new Wesley Memorial Hospital will be erected on a site recently purchased at Superior Street and Fairbanks Court. Northwestern University will lease land adjoining the McKinlock Campus for one of the hospital buildings, which will be used for clinical instruction. This building will have a capacity of 400 beds, and the total capacity of the new hospital will be 1,200 beds.

Chicago Hospitals Install Taxicab Call Service.—St. Luke's, Mercy, Wesley Memorial and the Chicago Memorial hospitals have installed "ticker" call boxes which provide them with two minute taxicab service. A signal is instantly recorded on a tape in the nearest agent's office, from which a taxicab is promptly dispatched. This service is identical with that used by the Western Union and Postal Telegraph companies to summon messengers. Chicago is the first city to use these call boxes in hospitals.

Data on Chicago Hospitals.—The Council on Medical Education and Hospitals, American Medical Association, has just compiled data on hospitals in Chicago. The total number in the city is ninety-nine, of which sixty-seven are general hospitals; seven, maternity; four, nervous and mental; four, convalescent; four, industrial; three, isolation; three, tuberculosis; and one each of the following: pediatric; orthopedic; eye, ear, nose and throat; urologic; alcoholic and drug; incurables, and U. S. Marine. The total number of beds in these hospitals is 14,645, and the average number of patients in them, 10,398, making the percentage of beds occupied 71. The hospitals vary in size from 2,500 beds (Cook County Hospital) to seven beds.

Radio Service Far Reaching.—For three years, the Public Health Service has operated a Health Information by Radio Service, consisting of weekly lec-



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tures on timely health topics. A total of forty-seven stations are now cooperating in this work.

Surgeon General Cumming was agreeably surprised recently to receive a letter from the Chairman of the Health Week Committee of Jerusalem, Palestine, which read in part as follows:

"Several of your talks on public health which were prepared for broadcasting were made use of during our recent health campaign. In the name of the Executive Committee of Health Week, I wish to thank you for these talks, which are very instructive."

To Make Serums the Same the World Over.—The Health Committee of the League of Nations, in a report to be filed with the Council of the League, a copy of which has just reached this country, announces the plans of the Committee for the standardization of anti-toxins and serums.

Last year agreement was reached on the question of the standardization of anti-toxin for diphtheria and it is expected that during the present year the tetanus serum will be standardized.

The researches on the sero-diagnosis of blood disease will also be further carried on during the present year.

Similar attempts for the standardization of serums are being carried on in other branches of practical medicine, notably with regard to the use of insulin.

The value of the standardization of serums and anti-toxin to physicians lies in the fact that in the future the medical authorities of different nations will have at their disposal the medical knowledge, practice, and literature of all countries.

In the past the hospital statistics of London, Berlin and Paris have been of little use to the American practitioner as every country has a different kind of serum.

DEATHS

NORMAN BRIDGE, emeritus professor of medicine, Rush Medical College, Chicago, died in Los Angeles, January 10. Born in Vermont in 1844, Dr. Bridge entered the University of Michigan Medical School, Ann Arbor, in 1866, graduating from the Chicago Medical College in 1868 and from Rush Medical College in 1878. Almost immediately after graduation, he became a member of the faculty at the Chicago Medical College, and a few years later entered the faculty of Rush, with which he was connected until the time of his death. In 1872 he was one of the publishers of the first volume of the Chicago Medical Register and Directory, and later became an associate editor of the Chicago Medical Journal and Examiner. Dr. Bridge was instrumental in building the Cook County Hospital and later the Presbyterian Hospital; he was a member of the Chicago Board of Education, 1881-1884; president, 1882-1883, and a member of the board of election commissioners from 1886 to 1890. He gave up a large practice in Chicago in 1892 on account of poor health and moved to Los Angeles. Here he held various public offices, among them membership on the board of freeholders which framed the new charter for Pasadena. He was one of the pioneers in tuberculosis work in southern California, and the author of "Lectures on Tuberculosis," "The Penalties of Taste," "The Marching Years" and many essays contributed to medical journals and books. Dr. Bridge was honored by many colleges and scientific societies, and was a Fellow A. M. A.; a member of the Illinois State Medical Society, the American Climatological and Clinical Association, the Association of American Physicians and the Chicago Institute of Medicine. He founded and endowed the Norman Bridge Laboratory of the California Institute of Technology, and made large gifts to Rush Medical College and other educational and charitable institutions.

Coughs and Colds

that tend to linger and fail to respond to remedies usually employed, almost always owe their persistence to inability of the body to restore a physiologic balance. Restorative and reconstructive treatment is essential and the ideal remedy is

Gray's Glycerine Tonic Comp.

(Formula Dr. John P. Gray)

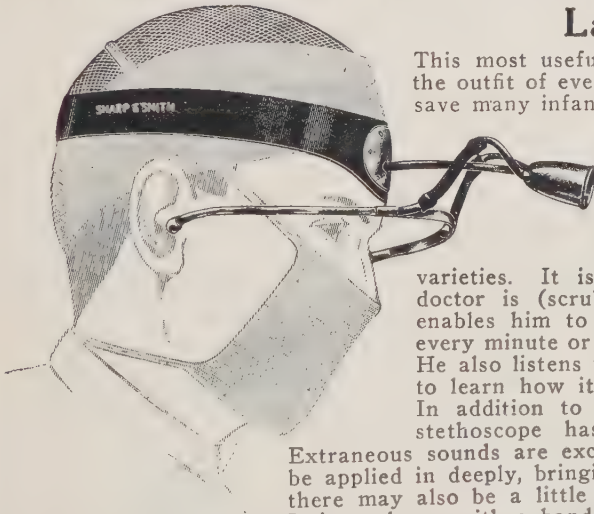
A third of a century's successful use of this widely employed reconstructive has shown countless medical men that Winter coughs and colds will not linger, if they use Gray's Glycerine Tonic Comp. from the beginning.

Used in doses of two to four teaspoonfuls three or four times a day, this dependable tonic not only increases the vitality and resistive powers of the whole body, but through its pronounced influence on the pulmonary circulation promotes the physiologic activity of the local tissues and enables them to overcome congestion and inflammation.

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The De Lee-Hillis Head Stethoscope Latest Model



This most useful instrument should be part of the outfit of every obstetric practitioner. It will save many infants' and mothers' lives.

It was designed especially for use during the second stage of labor of both (spontaneous and operative), but it is even more useful for all the purposes of a stethoscope than the usual varieties. It is worn on the head after the doctor is (scrubbed up) for the delivery and enables him to listen to the fetal heart tones every minute or two without infecting his hands. He also listens to the mother's heart frequently to learn how it is bearing the strain of labor. In addition to this great advantage the head stethoscope has valuable acoustic properties.

Extraneous sounds are excluded; by pressure the bell can be applied in deeply, bringing it closer to the fetal heart—there may also be a little audition from bone conduction. It is made up with a band over the top of the head, with

a circular fibre head band and, for easy portability, with a ribbon woven strap.

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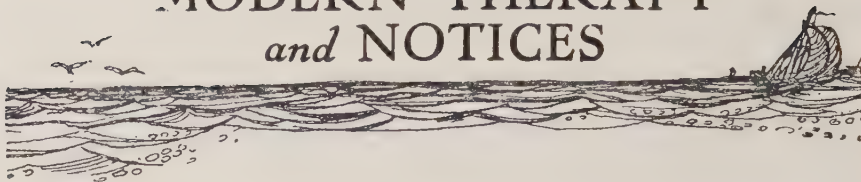
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Inc. 1904

MODERN THERAPY and NOTICES



A NEW MERCURIAL

What has been done for arsenic by the skill and patience of Ehrlich and his co-workers—that is to say, the presentation of it in a form that combines spirocheticidal activity with comparative safety of administration—has been done, it seems, for mercury also. This has long been the aim of chemical research—to find a mercurial compound that would kill the spirochete of syphilis without injuring the patient; in other words, a mercurial compound that could be administered in spirocheticidal doses.

Dr. Gruhzit, of the Parke-Davis laboratories, reports the demonstration of this property in Mercurosol administered intravenously to animals inoculated with syphilis. Two, or at the most three, doses eliminated the spirochetes completely from the syphilitic lesions. The doses corresponded to a dose of 0.2 gram for a man weighing 150 lbs., and it is believed that ten or twelve intravenous injections of a dose of this size should change a positive Wassermann to a negative in the primary stage of syphilis. Nevertheless, arsenic also (in the form of arsphenamin) or bismuth (as the salicylate) is advised, and a continuation of the treatment at intervals for two or three years.

Literature on Mercurosol is offered to physicians by Parke, Davis & Co., the manufacturers.

DECLARATION OF BELIEF

This is the age of cooperation between men for the general good, and organized effort in industry to elevate it. For this purpose the *American Pharmaceutical Manufacturers' Association* was organized, some fifteen years ago. In it are the representative American manufacturers of pharmaceutical preparations dealing, for the most part, directly with the medical profession. By it is sought to perfect the science of manufacturing pharmacy in the services of the medical profession and the public at large, to realize the highest ideals of this essential profession. As a result the association has adopted the following expressive and definitive *Declaration of Belief*:

I

We Believe that the pharmaceutical manufacturer should ever be mindful of and guided by the fundamental principle that his business is a solemn calling and a glorious profession dedicated to a great and paramount public service.



Mothers—now have no excuse for not serving hot oats porridge

WOMEN who used to protest when you said, "serve hot oats porridge," because oats took so long to cook, now can raise no objection.

Just tell them to get Quick Quaker, which cooks in 3 to 5 minutes! It's just the same as Quaker Oats—rich, luscious oats. But the flakes have been rolled extra thin and partially cooked.

It's a new Quaker process.

Result? The best of all breakfast dishes, ready as soon as the coffee. Children sent off to school and men to work stimulated and satisfied. Energy, endurance and vitality sustained by the ideal food-fuel.

Quick Quaker is a blessing to busy mothers, and to children who need building-up. Doctors and dieticians are quick to recommend it, for it solves the problem of serving quick yet hearty breakfasts.

Standard full size and weight packages—
Medium: 1½ pounds;
Large: 3 pounds, 7 oz.

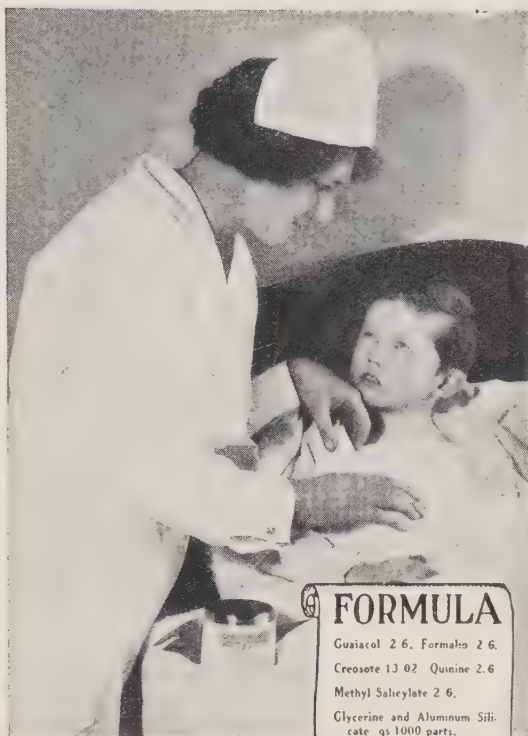
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*Cooks in 3 to 5
minutes*



**Quaker
Oats**

*The kind you
have always
known*



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Guaiacol 2.6. Formahs 2.6.
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Glycerine and Aluminum Silicate qs 1000 parts.
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LA GRIPPE, MASTITIS, AND
MANY OTHER CONDITIONS**

The Emplastrum

Pneumo-Phthisine
TRADE MARK

Gives such efficient and prompt results that for a large number of the profession it has come to be a regular resource in these conditions.

The Formula Tells the Story

The formula of Pneumo-Phthisine is, in itself, sufficient to convince the physician of the excellence of the product, but where clinical proof is desired, we are pleased to send a special clinical trial jar, free of charge.

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Gentlemen: Please send me, free of charge, a clinical trial specimen of Pneumo-Phthisine.

Dr.

Address

II

We Believe that the pharmaceutical manufacturer should always be animated by a true spirit of justice, amity, responsibility and service in all his dealings with others and unswervingly act at all times in pursuance of the elementary conception of right, honorable and ethical business conduct as befitting his membership in a society built upon the sure foundation of a democracy, organized in harmony with the most enlightened civilization in history, inspired by the teachings of our Divine Master, and finally directed equally to preserve the opportunity and rights of each for the benefit of all and to enhance the general happiness and welfare.

III

Hence We Believe that it is the unquestioned obligation of each and every pharmaceutical manufacturer:

- (a) To manufacture medicinal preparations only under proper conditions and of established value, pure and accurate in composition, and true upon and to their label;
- (b) To label, advertise and merchandise such preparations only in a manner wholly free from misrepresentation of any kind, in complete accord with both the spirit and terms of the applicable laws, and in entire harmony with the highest standard of commercial morality and ethics;
- (c) To refrain from in any way or to any extent infringing upon the equal rights (whether moral or legal) of a competitor and unfairly interfering with his business, as by uttering false or disparaging statements about him or his products or his business, by misappropriating his trade names or formula or the distinctive form or dress of his products, or by enticing away his employees;
- (d) In short, constantly, earnestly and conscientiously to strive at all times and in all ways to advance the science and to elevate the profession of manufacturing pharmacy to the highest and idealistic plane of public value to the end that it may best and most completely serve the medical profession and the public at large.

IV

This Do We Believe

"Whatsoever ye would that men should do to you,
do ye even so to them."

FOR MORE THAN THIRTY YEARS

the one thoroughly reliable and dependable preparation of organic iron and manganese has been Gude's Pepto-Mangan. In all civilized countries it has been extensively prescribed by all classes of physicians, to combat and overcome Anemia and Chlorosis, in all kinds of conditions such as Amenorrhea, Bright's Disease, Rickets, Tuberculosis, etc., and in Convalescence from all debilitating diseases. For those who travel from place to place, this valuable and well known hematinic is now available in tablet form, each two tablets being equivalent in medicinal activity to one tablespoonful Gude's Pepto-Mangan liquid. Samples and literature are obtainable from the manufacturers, M. J. Breitenbach Co., New York.



Yes, Rich Grains but how the children love them!

DIETICIANS who realize that Quaker Puffed Wheat and Puffed Rice are rich cereal foods have one great problem solved.

The child with a capricious appetite accepts them as confections and regards each bowlful as a treat. No coaxing required—the flaky, nutty bubbles vanish, with a request for “more!” Every bowlful means an increase in the milk ration, which is benefit number 2.

Tell mother to toast Puffed Wheat and Puffed Rice, then butter and salt it like popcorn. In this form they supplant candy and are liked even better.

Quaker Puffed Wheat and Puffed Rice are just the finest quality grains, steam exploded to eight times normal size. The process breaks up every food cell, making it doubly digestible. Everyone, child or adult, whose stomach needs resting, thrives on Quaker Puffed Grains.

Quaker Puffed Wheat Quaker Puffed Rice

Invented by Professor Anderson, the famous food expert. One of the most famous products that bears the Quaker trade-mark. This means supreme quality.

Quaker
Puffed
Wheat



Quaker
Puffed
Rice

Post-Operative Constipation

often causes extreme suffering and jeopardizes the efforts of the most skillful surgeon. The anesthetic, the shock of the operation, and in many instances the use of drastic cathartics before the operation, often produce almost complete paralysis of the bowel muscles. Peristalsis ceases and the fecal retention that follows, with the incidental formation of gas, invariably gives rise to severe pain and distress.

To avoid post-operative paresis and gas formation, AGAROL COMP. has been found invaluable. Given regularly a few days or a week previous to an operation, and its administration resumed as soon thereafter as circumstances permit, it may be confidently relied upon not only to produce evacuations without pain or distress, but to prevent the bowel sequelae and complications of surgical operations as no other remedy can.

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Facetiae Medicorum

Modern Definitions

Health—When every kitchen is flooded with sunshine.

Wealth—When every cellar is flooded with moonshine.—*Am. Mutual Mag.*

Didn't Have the Money

Returning from the dentist's where he had gone to have a tooth extracted, little Henry reported as follows:

"The doctor told me 'fore he began that if I cried or screamed it would cost me 75 cents, but if I was a good boy it would only be half a dollar."

"Did you scream?" his mother asked.

"How could I?" answered Henry. "You only gave me half a dollar."—*Laffodontia*.

Unfair Discrimination

"Oh, no!" soliloquized Johnny, bitterly; "there ain't any favorites in this family. Oh, no! If I bite my finger-nails, I get a rap over the knuckles, but if the baby eats his whole foot, they think it's cute."—*Ladies' Home Journal*.

He Knew

Fresh: "I don't know what to do with my week-end."

Soph: "Put your hat on it."—*Business Suggestions*.

He Got Even

"Little Willie pointed at his sister's sweetheart, Mr. Jones.

"Mr. Jones kicked me yesterday," he snarled, but I got even with him, you bet your life. I mixed up quinine with my sister's face powder."

Some Consolation

A rich man, lying on his death bed, called his chauffeur who had been in his service for years, and said:

"Ah, Sykes, I am going on a long and rugged journey, worse than ever you drove me."

"Well, sir," consoled the chauffeur, "there's one comfort, it's all down hill."

A Serious Statement

"Eating too much is bound to shorten your life," observed the Doctor.

"That's right," agreed the Farmer. "Pigs would live a good deal longer if they didn't make hogs of themselves."—*Cincinnati Enquirer*.

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The only permanent cure known for superfluous hair, moles, warts, etc. I Positively Guarantee My Work to be Permanent. No Pains or Scars. I use Multiple Electrolysis (many needles), the quickest, cheapest and most reliable of all electric needle methods. Special attention to cases referred to me by physicians.

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Useful in preparation for all abdominal operations or operations on the pubic region.

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Relieves patient of the discomfort and risk attending the use of a razor. Incoming growth is slower to reach the surface than if shaved, and is softer and finer than growth following the use of a razor.

A full size trial tube with complete instructions for use will be mailed without charge to any physician requesting it.

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An effective combination of five bromide salts that owes its exceptional therapeutic value to its purity, palatability and potency.

Indicated in headache, epilepsy, sleeplessness, uterine congestion and all reflex, convulsive and congestive nervous disorders.

Dose: One to three
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A reliable preparation of *Chionanthus Virginica*.

Used with gratifying results in catarrhal jaundice, cholecystitis, auto-intoxication, gastro-intestinal disturbances, malarial infections and whenever cholagogue effect is desired without catharsis.

Dose: One to two teaspoon-
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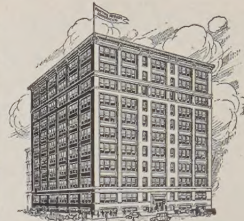
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Invaluable for promptly relieving and overcoming tachycardia, palpitation, arrhythmia, tobacco heart and all cardiac ills of functional origin.

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A true intestinal corrective that produces physiologic evacuations from the bowel without griping, distress or after-constipation.

Employed with conspicuous success in the treatment of constipation, intestinal stasis, auto-intoxication and whenever thorough bowel elimination is needed.

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The prudent practitioner, being guided by the dictates of experience, relieves himself from disquieting uncertainty of results by safeguarding himself against imposition when prescribing

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The widespread employment of the preparation in the treatment of anomalies of the menstrual function rests on the unqualified indorsement of physicians whose superior knowledge of the relative value of agents of this class stands unimpeached.

By virtue of its impressive analgesic and antispasmodic action on the female reproductive system and its property of promoting functional activity of the uterus and its appendages, Ergoapiol (Smith) is of extraordinary service in the treatment of

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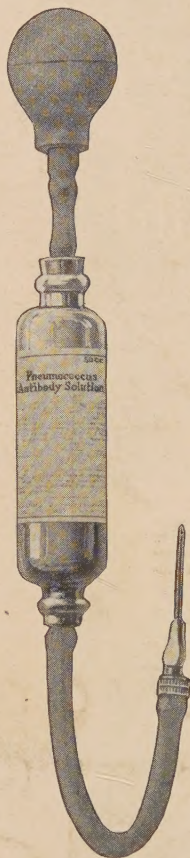
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For treatment of Lobar Pneumonia



First announced in 1919, Pneumococcus Antibody Solution (Types I, II and III Combined) has since been subjected to extensive clinical study. Over 600 treated cases have been reported from the New York and Bellevue Hospitals, New York City, and elsewhere. Both intravenous and subcutaneous methods of administration have been tried.

THE PRODUCT—Pneumococcus Antibody Solution—Mulford is a clear, colorless, serum-free, aqueous solution, containing the antibodies obtained from potent Antipneumococcic Serum (Types I, II and III Combined).

ADVANTAGES—Safer than serum—no serum sickness—no anaphylaxis. Administration possible without delay immediately on diagnosis—typing may follow. Injection outfit supplied facilitates intravenous administration.

RESULTS—Death rate reduced one-half by intravenous administration of Pneumococcus Antibody Solution—Mulford within first three days in pneumococcus lobar pneumonias. (*Cecil, Weekly Roster and Medical Digest, March 24, 1923*). No other series of controlled cases, showing like results, has ever been reported.

The clinical experience shows the intravenous administration to be the method of choice. The thermal reactions (chill followed by rise of temperature) which may follow intravenous use are of short duration and controllable by usual treatment.

DOSAGE—Initial intravenous dose 25 to 50 cc, two doses being given during first day of treatment, 8 to 12 hours apart, then one or two doses on subsequent days, until temperature is lowered to 100°.

HOW SUPPLIED—In packages containing one 50 cc double-end vial and packages containing four 50 cc double-end vials, one complete intravenous outfit in each package.

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